DCCUMENT RESUME

ED 050 087 24 TE 002 358

AUTHOR	Saemen, Ruth Ann
TITLE	Effects of Commonly Known Meanings on Determining Obscure Meanings of Multiple-Meaning Words in Context. Report from the Project on Individually Guided Elementary Language Arts.
INSTITUTION	Wisconsin Univ., Madison. Research and Development Center for Cognitive Learning.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
REPORT NO	TR-148
BUREAU NO	BR-5-0216
PUB DATE	Sep 70
CONTRACT	OEC-5-10-154
NOTE	137p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$6.58
DESCRIPTORS	Connected Discourse, *Definitions, Grade 4, *Intermediate Grades, Linguistics, *Semantics, *Syntax

ABSTRACT

This study was designed to investigate children's ability to use semantic syntax in connection with two types of meanings of polysemantic words. One hundred fourth graders ranked the familiarity of multiple definitions of 60 words given in a semantic survey. Those 34 words found to have common meanings or obscure meanings were used to construct a Words in Context Test. A second version of the test was developed using a low-association value trigram instead of the target real word. The two versions were administered to 64 subjects from three fourth-grade classes randomly assigned to experimental groups. There were consistently more errors on obscure meanings than on common meanings. The mean difference was greater with real words (-4.81) than with trigrams (-.75). Fewer errors were made with real words on common meanings, but more errors were made with real words on obscure meanings. Children's problems with obscure meanings represented by the frequent use of multiple-meaning words in sentences seem to be due to interference by better-known meanings of familiar words diverting them from the semantic syntax. (The appendices contain the semantic survey, the Words in Context Tests, and several Statistical Tables.) (Author/DD)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED050087

BR 5-0216
PA 24

TE 002 354

Technical Report No. 148

EFFECTS OF COMMONLY KNOWN MEANINGS ON DETERMINING OBSCURE MEANINGS OF MULTIPLE-MEANING WORDS IN CONTEXT

Report from the Project on
Individually Guided Elementary Language Arts

By Ruth Ann Saemen

Wayne Otto, Professor of Curriculum and Instruction
Chairman of the Examining Committee and Principal Investigator

Wisconsin Research and Development
Center for Cognitive Learning
The University of Wisconsin

September 1970

This Technical Report is a doctoral dissertation reporting research supported by the Wisconsin Research and Development Center for Cognitive Learning. Since it has been approved by a University Examining Committee, it has not been reviewed by the Center. It is published by the Center as a record of some of the Center's activities and as a service to the student. The bound original is in The University of Wisconsin Memorial Library.

Published by the Wisconsin Research and Development Center for Cognitive Learning, supported in part as a research and development center by funds from the United States Office of Education, Department of Health, Education, and Welfare. The opinions expressed herein do not necessarily reflect the position or policy of the Office of Education and no official endorsement by the Office of Education should be inferred.

Center No. C-03 / Contract OE 5-10-154

NATIONAL EVALUATION COMMITTEE

Samuel Brownell
Professor of Urban Education
Graduate School
Yale University

Launor F. Carter
Senior Vice President on Technology and Development
System Development Corporation

Francis S. Chase
Professor
Department of Education
University of Chicago

Henry Chauncey
President
Educational Testing Service

Martin Deutsch
Director, Institute for Developmental Studies
New York Medical College

Jack Edling
Director, Teaching Research Division
Oregon State System of Higher Education

Elizabeth Koontz
Wage and Labor Standards Administration, U.S. Department of Labor, Washington

Roderick McPhee
President
Punahou School, Honolulu

G. Wesley Sowards
Director, Elementary Education
Florida State University

Patrick Suppes
Professor
Department of Mathematics
Stanford University

***Benton J. Underwood**
Professor
Department of Psychology
Northwestern University

RESEARCH AND DEVELOPMENT CENTER POLICY REVIEW BOARD

Leonard Berkowitz
Chairman
Department of Psychology

Archie A. Buchmiller
Deputy State Superintendent
Department of Public Instruction

Robert E. Grinder
Chairman
Department of Educational Psychology

Russell J. Hosler
Professor, Curriculum and Instruction

Clauston Jenkins
Assistant Director
Coordinating Committee for Higher Education

Herbert J. Klausmeier
Director, R & D Center
Professor of Educational Psychology

Stephen C. Kleene
Dean, College of Letters and Science

Donald J. McCarty
Dean
School of Education

Ira Sharkansky
Associate Professor of Political Science

B. Robert Tabachnick
Chairman, Department of Curriculum and Instruction

Henry C. Weinlick
Executive Secretary
Wisconsin Education Association

M. Crawford Young
Associate Dean
The Graduate School

EXECUTIVE COMMITTEE

Edgar F. Borgatta
Brittingham Professor of Sociology

Anne E. Buchanan
Project Specialist
R & D Center

Robin S. Chapman
Research Associate
R & D Center

Robert E. Davidson
Assistant Professor, Educational Psychology

Frank H. Farley
Associate Professor, Educational Psychology

***Herbert J. Klausmeier**
Director, R & D Center
Professor of Educational Psychology

Russell J. Hosler
Professor of Curriculum and Instruction and of Business

Wayne Otto
Professor of Curriculum and Instruction (Reading)

Robert G. Petzold
Associate Dean of the School of Education
Professor of Curriculum and Instruction and of Music

FACULTY OF PRINCIPAL INVESTIGATORS

Vernon L. Allen
Professor of Psychology

Ted Czajkowski
Assistant Professor of Curriculum and Instruction

Robert E. Davidson
Assistant Professor of Educational Psychology

Gary A. Davis
Associate Professor of Educational Psychology

M. Vere DeVault
Professor of Curriculum and Instruction (Mathematics)

Frank H. Farley
Associate Professor of Educational Psychology

Lester S. Golub
Lecturer in Curriculum and Instruction and in English

John G. Harvey
Associate Professor of Mathematics and of Curriculum and Instruction

Herbert J. Klausmeier
Director, R & D Center
Professor of Educational Psychology

Donald Lange
Assistant Professor of Curriculum and Instruction

James Moser
Assistant Professor of Mathematics Education; Visiting Scholar

Wayne Otto
Professor of Curriculum and Instruction (Reading)

Milton O. Pella
Professor of Curriculum and Instruction (Science)

Thomas A. Romberg
Associate Director, R & D Center
Professor of Mathematics and of Curriculum and Instruction

B. Robert Tabachnick
Chairman, Department of Curriculum and Instruction

Richard L. Venezky
Assistant Professor of English and of Computer Sciences

Alan Voelker
Assistant Professor of Curriculum and Instruction

Larry Wilder
Assistant Professor of Curriculum and Instruction

Peter Wolff
Assistant Professor of Educational Psychology

MANAGEMENT COUNCIL

Herbert J. Klausmeier
Director, R & D Center
V.A.C. Henmon Professor of Educational Psychology

Mary R. Quilling
Director
Technical Development Program

Thomas A. Romberg
Associate Director

James Walter
Director
Dissemination Program

Dan G. Woolpert
Director
Operations and Business

* COMMITTEE CHAIRMAN

STATEMENT OF FOCUS

The Wisconsin Research and Development Center for Cognitive Learning focuses on contributing to a better understanding of cognitive learning by children and youth and to the improvement of related educational practices. The strategy for research and development is comprehensive. It includes basic research to generate new knowledge about the conditions and processes of learning and about the processes of instructional materials, many of which are designed for use by teachers and others for school settings. Throughout these operations behavioral scientists, curriculum experts, academic scholars, and school people interact, insuring that the results of Center activities are based soundly on knowledge of subject matter and cognitive learning and that they are applied to the improvement of educational practice.

This Technical Report is from the Individually Guided Instruction in Elementary Reading Project in Program 2. General objectives of the Program are to establish rationale and strategy for developing instructional systems, to identify sequences of concepts and cognitive skills, to identify or develop instructional materials associated with the concepts and cognitive skills, and to generate new knowledge about instructional procedures. Contributing to these Program objectives, the Reading Project staff, in cooperation with area teachers, prepared a scope and sequence statement of reading skills for the elementary school as a first step in the development of an instructional program. From this outline, assessment procedures and group placement tests have been developed, and existing instructional materials have been keyed to the outline. Research is conducted to refine the program and to generate new knowledge which will be incorporated into the system.

ACKNOWLEDGEMENTS

I sincerely thank

Dr. Wayne Otto, my major professor, for tempering guidance and advice in my doctoral program and on my dissertation with a sense of humor,

Dr. Karl Koenke for blending suggestions and support as a member of the reading committee,

Dr. Robert Davidson for his suggestions of readings which helped me translate from verbal learning, "disambiguate an ambiguous lexical item in a lexical string," to reading, "comprehend a multiple-meaning word in a sentence," and for serving as a member of the reading committee,

Dr. Joel Levin for serving on the orals committee and for his trenchant observations on statistics,

Dr. John Giebink for serving on the orals committee and for his help as my minor professor,

Dr. Theodore Harris, formerly of the University of Wisconsin, whose influence on students is so subtle and so profound that I had chosen my topic and begun work before learning that he had done research in the area,

Dr. Kenneth Dulin, who served on the proposal committee, Dr. Lester Golub, and Mrs. Karlyn Kamm for painstaking help in reviewing the earliest sentences for the test,

The principals and fourth-grade teachers at St. James, Blessed Sacrament, Mazomanie, and Black Earth Elementary Schools for their participation and interest in the study,

Carol Hosig, Dorothy Frayer, and Sue Maurer for the level of friendship which "multiplies joys and divides griefs."

TABLE OF CONTENTS

	Page
STATEMENT OF FOCUS	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABSTRACT	ix
CHAPTER	
I. INTRODUCTION	
General Purpose of the Study	7
Review of the Literature and Rationale for the Study	8
Hypotheses Tested	16
II. METHOD	21
The Semantic Survey	22
Words in Context Test A	40
Words in Context Test B	45
Words in Context Tests C and D	46
III. RESULTS AND DISCUSSION	50
Results	50
Differences Between Common and Obscure Errors	54
Differences Between Common and Obscure Errors as a Function of Version	55
Differences Between Boy's and Girl's Performance on the Test	57
Test Characteristics	58
IV. SUMMARY, CONCLUSIONS, AND IMPLICATIONS	62
Summary and Conclusions	62
Implications for the Teaching of Reading	66
Implications for Further Research	69

TABLE OF CONTENTS (continued)

		Page
APPENDIX A:	THE SEMANTIC SURVEY	70
APPENDIX B:	WORDS IN CONTEXT TEST A	78
APPENDIX C:	WORDS IN CONTEXT TESTS C AND D	94
APPENDIX D:	TABLES OF MEANS AND STANDARD DEVIATIONS OF ERROR SCORES FOR COMMON AND OBSCURE ERRORS BY EXPERIMENTAL GROUPS	124
REFERENCES	. . . . .	126

LIST OF TABLES

Table		Page
1	Semantic Survey Words: Estimates of Frequency in General Reading from the Thorndike-Lorge List and in Children's Writing from the Rinsland List	26
2	Percentages of Common Meanings of Multiple-meaning Nouns From the Semantic Survey	31
3	Percentages of Obscure Meanings of Multiple-meaning Nouns From the Semantic Survey	32
4	Semantic Survey Common and Obscure Results Compared to Semantic Count Based on Oxford English Dictionary Listings	33
5	Mean Common, Obscure, Total (c+o) and Difference (c-o) Scores by Experimental Groups and Across Sex	52
6	Analysis of Variance Table for Errors on the Test	53
7	Hoyt Internal Consistency Reliabilities for the Words in Context Tests	58
8	Numbers of Errors Made on Common Meanings on All Forms . .	60
9	Numbers of Errors Made on Obscure Meanings on All Forms .	61

LIST OF FIGURES

Figure		Page
1	Mean Common and Mean Obscure Errors as a Function of Version	56

ABSTRACT

To determine the appropriate meaning of a multiple-meaning word in a sentence context, the reader uses grammatical and semantic syntax and the word itself, with its range of meanings in the requisite form class.

The present study was designed to investigate children's ability to use the semantic syntax in conjunction with two types of meanings of polysemantic survey. The survey consisted of 60 words, each accompanied by four definitions of it taken from a children's dictionary. One hundred fourth graders ranked the familarity of the definitions of each word best known through least known. Following the survey, definitions ranked "1" by 75 percent of the subjects were labeled common meanings, and definitions ranked "4" or left blank by 75 percent were labeled obscure. The Lorge-Thorndike semantic count was consulted to confirm the seeming reasonableness of children's choices.

When common and obscure meanings had been distinguished, 34 words, 17 common and 17 obscure meanings, were used to construct the pilot form of the Words in Context Test. The test consisted of simple, declarative sentences 11 $\pm$ 2 words in length with an underlined target word placed in the last half of the sentence followed by four noun meanings of the target word. A second version was constructed which differed from the first only in the use of a low-association value trigram as a substitute for the target real word. The purpose of the second version was to duplicate the semantic syntax, but to substitute a different lexical item. Thus, the interaction of semantic syntax and lexical items in the two situations could be compared.

To preclude the possibility that effects noted in the pilot study were unique to the particular form, a second set of items was devised by using grammatical constraints. A coin-flipping technique was used to assign pooled items to the two forms.

The two forms, versions I (real words) and II (trigrams), were administered to 64 subjects from 3 fourth-grade classes randomly assigned to experimental groups. An analysis of variance was carried out on the error scored for the tests. In the within-subjects analysis, a difference score, common meaning errors minus obscure meaning errors, was used as the dependent variable with sex, form, and version, as independent variables. Interactions involving meaning with either sex or form were non-significant. The main effect of meaning and the interaction of version and meaning were significant.

The differences in the number of errors were consistently negative, i.e., more errors on obscure meanings than on common meanings. The mean difference was greater with real words than with trigrams, -4.81

compared to -.75. Fewer errors were made with real words on common meaning. Conversely, with obscure meaning more errors were made with the real words. The problems a child has with obscure meanings represented by frequently-used multiple-meaning words in sentences seem to be due to interference by better-known meanings of familiar words diverting him from the semantic syntax.

The between-subjects analysis of variance was carried out using a total score, common meaning errors plus obscure meaning errors, as the dependent variable with sex, form, and version as independent variables. In this assessment of overall ability to use context, girls performed significantly better than boys. The same relationships of errors on common and obscure meanings, however, were apparent for both boys and girls.

Chapter I

INTRODUCTION

"'When I use a word', Humpty Dumpty said, in rather a scornful tone, 'it means just what I choose it to mean... neither more nor less'" (Dodgson, 1957, p. 88). Stripped of its philosophical and philological implications, Humpty Dumpty's statement represents the position of a person who uses a multiple-meaning word. A speaker or writer bounds a specific meaning of a word by placing it in a context. The context may be purely verbal, or it may depend on the total situation. The sentence, "The chair is ready," is ambiguous in the absence of a situational context such as a formal meeting or an upholstery shop.

A reader is totally dependent on verbal context to determine the appropriate meaning of a multiple-meaning word. The young reader may encounter many sources of difficulty in his use of context to determine less common meanings of multiple-meaning words. First, he may regard reading as basically a decoding process. In this case he is satisfied that he "knows" a word if he can say it. Second, he may know only one meaning of the word and attempt to use it regardless of syntax. This inappropriate extension may occur within a form class, i.e., noun, verb, adjective and adverb, or across form classes. Third, the young reader may have difficulty choosing among the meanings which he knows if he is not skilled at relating the possible meanings of the word to meanings

of the remainder of the sentence. If a reader disregards sentence meaning and grammatical syntax, the best-known meaning of a word may be evoked rather than the appropriate less common meaning. Finally, the reader may lack competence in using the dictionary as a resource for unknown meanings. Skill with semantic and grammatical syntax is necessary for recognizing the need to use the dictionary and for selecting the appropriate meaning in a given instance.

The problems cited are directly related to semantic skills required for understanding sentences. Carroll (1968) has observed, "Contemporary psycholinguistic studies are starting to make some progress towards revealing the highly complex nature of sentence comprehension in its grammatical aspects; the analysis of semantic aspects remains virtually untouched." Elaborate grammatical analyses are not sufficient to explain the comprehension process. First, a sentence may have a common and acceptable grammatical syntax, but an incomprehensible semantic syntax. The sentence, "I saw the aroma of frying chicken," is grammatically satisfactory but semantically anomalous. Second, a sentence with a common grammatical pattern may lend itself to several semantic interpretations. As noted earlier, the sentence, "The chair is ready," is ambiguous without a physical context. Third, even a seemingly straightforward unambiguous sentence may contain a multiple-meaning word, an ambiguous lexical item.

Fodor and Katz (1964) have specified components for the abstract form of a semantic theory of a natural language. The suggested theoretical components are as follows: "...a dictionary of the lexical items of the language and a system of rules (which we shall call projection

rules) which operates on full grammatical descriptions of sentences and on dictionary entries to produce semantic interpretations for every sentence of the language." These components may be adapted for a theoretical framework to explain the process of understanding a sentence with a multiple-meaning word. An example may clarify the way in which the theory may be related to a specific reading task. To read "The poodle was lame because he hurt his pad," the reader uses grammatical and semantic syntax and his knowledge of the lexical item pad. A schema illustrating the syntaxes in this sentence appears on the following page. The words preceding pad are lexical items for which the young reader usually knows one meaning. He may know more than one meaning for pad. If so, he considers the various meanings in reference to the preceding grammatical and semantic syntax and chooses the appropriate meaning. If the specific meaning is unknown to the reader, he may either look up the word in a dictionary or use the information from context to determine the meaning in the sentence. This example dealt with a multiple-meaning word in only one of its parts of speech. A more complex choice may be involved when a multiple-meaning word can function as different parts of speech. The word round, for example, may be an adjective, noun, verb, preposition, or adverb. Skill in both semantic and grammatical aspects of language, therefore, is required for handling round in a sentence.

The challenge of multiple-meaning words to the reader has been studied by reading researchers. In an early study of multiple-meaning words in context, Harris (1938) used a matching test which focused simultaneously on the two types of syntax and on lexical items. A

SCHEMA FOR READING A SENTENCE WITH A MULTIPLE-MEANING WORD

(Semantic Syntax)	a dog	past tense of <u>to be</u>	not walking easily	for the reason
(Sentence)	<u>The poodle</u>	<u>was</u>	<u>lame</u>	<u>because</u>
(Grammatical Syntax)	subject	predicate	adjective describing dog	conjunction

(Semantic Syntax)	dog the poodle	injured	dog's the poodle's	(noun meanings) a soft cushion a tablet of writing paper a water lily leaf the soft part of a dog's foot
(Sentence)	<u>he</u>	<u>hurt</u>	<u>his</u>	<u>pad</u>.
(Grammatical Syntax)	subject	predicate	possessive pronoun	direct object

study by Howards (1964) focused on semantic syntax and lexical items using a multiple-choice test.

The present study was designed to extend multiple-meaning word research by emphasizing the lexical component as it interacts with the semantic syntax. Multiple-choice tests were developed to assess children's understanding of polysemantic words placed in sentence contexts. Multiple-meaning words interact with grammatical and semantic syntax. To avoid the type of grammatical interaction in which a child must choose from among different parts of speech, the writer used only nouns as target words and answer choices. The answer choices, taken from a children's dictionary, were four noun definitions of each target word. Consequently, any answer would have been grammatically defensible. Minimal semantic syntax interaction with a specific word would be exemplified by the sentence "I saw an aoudad." Without a zoo context, the reader could deduce only that aoudad was a concrete noun. Frequently, however, the semantic syntax interacts more with a component lexical item, i.e., the possible meaning of a specific word in a sentence is limited by the meanings of the remaining words. To illustrate, a reader who reads the sentence "The child reached into the cage and gently stroked the gerbil's fur" might be unfamiliar with the word gerbil. The context would provide some information, e.g., cage and fur indicate that a gerbil is an animal. The phrase reached into the cage indicates accessibility to the child which, from experience, suggests that the animal is not dangerous. The phrase stroked the gerbil's fur suggests its relative tameness. As the characteristics harmless and tame are indi-

cated, their opposites, dangerous and wild, are eliminated. As animal is indicated by fur other creatures, e.g., birds and reptiles, are eliminated. In sum, by exploiting interrelationships, the reader can determine that the gerbil is probably a harmless, tame animal. Individual sentences vary in the usefulness of the semantic syntax in determining a particular meaning within the sentence. In the sentence "Koalas eat eucalyptus leaves," the reader can assume that koalas are living creatures because they eat, but he doesn't know whether they are human or animal. He might assume that eucalyptus is flora since it has leaves, but he can not determine whether it is a plant, a vine, a shrub, or a tree. Thus, the semantic syntax may have interrelationships offering many clues or few interrelationships with a minimal number of clues to an unknown word.

The potential for interaction of semantic syntax and lexical item is dependent on the number of interrelationships and clues in the semantic syntax and on the lexical item itself. A difficult word may involve a single abstract and complex idea--e.g., totalitarianism, id--or it may be a polysemantic word with a broad spectrum of meanings. The latter type of word is the focus of the study. To facilitate examination of the interaction of semantic syntax and polysemantic lexical items, words with meanings which are common or obscure to fourth graders were placed in sentence contexts. A comparison was made of the number of errors on each type of meaning when it was represented by a real word. To examine the interaction of the semantic syntax with the word representing each type of meaning, the error difference was calculated.

To evaluate the differences, it was necessary to isolate one of the two components of the interaction, semantic syntax and lexical item. The isolation was accomplished by replacing the lexical item with an arbitrarily-selected low-association value trigram in the exact sentence context. A child who discerned the meaning assigned to a trigram was forced to rely on the semantic syntax completely since the low-association value trigram has little inherent meaning. A child who discerned the meaning of a real word could utilize both the word and the semantic syntax. Differing results on the two test versions would reflect the effect of using only semantic syntax or of using semantic syntax in conjunction with the lexical item to determine the meaning of a specific word.

General Purpose of the Study

The primary purpose of the study was to determine whether more commonly-known meanings of polysemantic words interfere with a child's use of semantic syntax to ascertain an appropriate obscure meaning in a sentence context. To achieve this general purpose, secondary purposes were defined: (1) to determine common and obscure meanings of multiple-meaning nouns, (2) to compare children's ability to use context to determine common meanings with their ability to use context to determine obscure meanings, (3) to ascertain whether error differences on common and obscure meanings were primarily attributable to both the lexical items which represent those meanings and the range of meanings for each item, and (4) to compare boys' and girls' ability in the use of context to determine whether this reading skill is better developed in young girls

than young boys.

Review of the Literature and Rationale for the Study

This review of the literature deals with three areas relevant to the present study: (1) enrichment vocabulary, (2) context, and (3) reading achievement of boys and girls. The term "enrichment vocabulary" is synonymous with the terms "polysemantic lexical items" and "multiple-meaning words." The term "context" used by reading researchers corresponds to one or both of the terms "semantic syntax" and "grammatical syntax components" used by semanticists.

Enrichment Vocabulary

If a fourth-grade child read a story about aviation, he might encounter the following technical vocabulary: aileron, afterburner, bank, and wash. The first two terms would be classified as expansion vocabulary involving the acquisition of new words; the latter two would be classified as enrichment vocabulary involving new meanings of known word forms. The new words have a certain conspicuousness which alerts the reader to the need to attend to their meanings. Conversely, in the case of new meanings of familiar forms, a strong prior association may supply a meaning which is not appropriate in the present setting. Thorndike (1934) considered both expansion and enrichment vocabulary to be especially important in the middle grades.

Despite the need for attention to both types of vocabulary, in standardized reading tests the expansion process receives major emphasis. Test construction specialists, as well as teachers and children, are probably more attuned to new words as denoting vocabulary growth.

Attention to new words prior to the reading of a basal reader story and isolated teaching of lists of new words also attest to a general stress on expansion.

The importance of the enrichment aspect is implicit in the following statement by McKee (1948, p. 100). "Obviously in measuring the vocabulary difficulty of a book, one needs to measure the degree of difficulty which pupils have in understanding the meanings of words in the settings in which those words are used." A monosyllabic word may be phonetically regular and, consequently, an "easy" word to pronounce, but it may be a "hard" word to understand when it is used to denote an obscure meaning. Smith's (1963) statements concerning polysemantic words underscore the role of enrichment vocabulary in reading: "The chief trouble-makers are the polysemantic words. A polysemantic or multiple-meaning word is one that is capable of shifting its meaning many times, each time having a connotation which is quite different from the others (p. 281-282)." She recommends that teachers check frequently upon the new use of a multiple-meaning word and guide children in making the transition from one meaning to another.

High-frequency multiple-meaning words may receive less attention than they deserve because of their unobtrusiveness. Many of them are sight words for which children know the most common meaning so the usual oral distress signals, hesitation, difficulty in word attack, faulty phrasing, and a rising inflection, do not alert the teacher to the child's need for help in understanding the word in its present setting. Even when the child actively seeks help, multiple-meaning words may be problematic.

A consideration of the introductory example, the aviation terms, illustrates the potential difficulties in using the dictionary with enrichment vocabulary words. The terms aileron and afterburner were cited as expansion vocabulary. A resourceful child who checked a children's dictionary would find aileron defined simply with one meaning and an illustration. If he checked an unabridged dictionary, he would find a single definition of afterburner. However, if he looked up the word bank, he would find three separate listings: one with seven meanings, one with five meanings, and one with two meanings. The entry wash has eighteen discrete meanings. An unusual meaning of a multiple-meaning word may constitute an equal if not greater challenge than a totally new single-meaning word since the reader would need to choose from among an array of dictionary definitions on the basis of context.

Relatively little research has been done pertaining to the enrichment aspect of vocabulary development with reference to reading. Gammon (1952) investigated primary-grade children's understanding of multiple-meaning words used in their basal readers. Her results indicate that the children in the first three grades did not know very many of the specific meanings of high-frequency polysemantic words used in their reading materials. The Harris (1938) and Howards (1964) studies mentioned earlier also deal with enrichment vocabulary. Since these studies are closely related to the present study in terms of the testing procedures and the ages of their subjects, they will be described in more detail.

Harris (1938) developed A Test for Discrimination of Word Meaning. His instrument was designed "..to determine the discriminatory ability of the pupil when he is confronted with a choice of several meanings, one of which best fits a particular context (p. 3)." In his test the student matched an underlined word in a sentence with the best meaning. The items ranged from a word in a single sentence to a word used in ten different sentences. In each case the target word was to be matched with its correct meaning.

Harris analyzed his data by determining the percentage of fourth- and sixth-grade subjects who responded correctly to each of the meanings given for each word. Differences such as 74 percent correct response for one meaning of bed and 23 percent for another meaning led him to conclude "that words vary greatly in the amount of discrimination required for their various meanings (p. 83)." The ranges of correct responses to the varied meanings of a given word, e.g., 16-71 percent for the meanings of the word word, suggest that there are commonly-known and seldom-known meanings of polysemantic words, a premise basic to this study. The Harris study included fourth and sixth graders; therefore, a number of his conclusions pertain to comparisons of the two grades. While his sixth-grade subjects were more successful at the task, he observed that words which were difficult for fourth graders were also difficult for sixth graders.

Harris investigated the two types of syntax and the lexical item simultaneously. Grammatical syntax was entailed since a given word might have meanings which were different parts of speech. To illustrate,

the three sentences for answer on the Harris test are "Please give me an answer to my question," "I will answer when you call," and "A newspaper will answer for a tablecloth (p. 100)." The word answer has one noun meaning and two verb meanings. Harris' conclusions about children's difficulties with grammatical syntax features are not relevant to the present study. The Harris study has noteworthy strengths: (1) the use of definitions adapted from a children's dictionary, and (2) the use of alternatives which are meanings of the target word. Its weakness is its use of a matching format, because the number of alternative meanings for any word decreases as each meaning is matched to a sentence.

Howards (1964) developed the Multiple-Meaning Word Test (MMWT) to determine whether significant differences existed in elementary school children's understanding of various meanings of multiple-meaning words. His test was a multiple-choice instrument in which each of 40 target words was put into four different sentence contexts. In each of the 160 sentences, four choices of meaning were offered for the target word. Howards found that sixth-grade subjects knew more meanings of high-frequency words than fifth-grade subjects did, and that fifth-grade subjects knew more meanings than fourth-grade subjects did. All differences were statistically significant at the .01 level. His results support Harris' results concerning commonly-known and seldom-known meanings. Interestingly, when Howards compared subjects' expansion vocabularies as measured by the Iowa Silent Reading vocabulary subtest with their enrichment vocabularies as measured by the MMWT, he found that

breadth and depth of vocabulary are "predictable from each other with a considerable probability of accuracy (p. 379-80)." The correlation of the MMWT with the intelligence quotients of the subjects was .65.

Howards investigated the interaction of semantic syntax and lexical item since the four alternatives for a given sentence were in the same form class. A sample sentence using a verb-meaning on the Howards test follows: "The pilot will bank the airplane." Three other meanings of bank appear in separate items. Thus, four meanings of 40 words were checked using 160 sentences. Though some meanings were nouns and other meanings were other parts of speech, the distractors were always consistent with the form class of the meaning. Howards' distractors were unrelated words, not other meanings of the target word. In a normal reading situation, presumably the various meanings of a multiple-meaning word would be more apt to distract the reader than meanings of unrelated words.

Context

In reading research and reading literature, the term context covers both semantic syntax and grammatical syntax. For example, Spache and Spache (1969, p. 417) describe contextual analysis as "...the reader's ability to determine word recognition and word meaning by the position or function of a word in a familiar sentence pattern." Citing "idea and presentation clues" as discussed by McCullough, Spache and Spache include under the heading of contextual clues semantic clues such as "comparison and contrast" and grammatical clues such as "familiar expression" and "position of word within a sentence."

In discussing the results of an experiment by Porter, Spache and Spache indicate that good third-grade readers were able to deduce probable meanings of an omitted word 82 percent of the time (p. 418). Omission of a word forces children to rely on semantic syntax.

In a study by Edick, reported by McCullough (1943), third-graders' use of contextual aids was investigated. Five contextual devices commonly used in basal readers and subject matter textbooks were identified and tested. The devices were "definition," "experience," "synonyms," "comparison and contrast," and "familiar expressions." In reviewing Edick's study, Dulin (1968) observed, "Even in a test designed to provide third graders with obvious clues, their average percentage of correct answers was only roughly 40% with little difference from device to device." The difference in Porter's and Edick's findings may be due to Porter's forcing reliance on semantic syntax and Edick's using a test form which allowed interaction of semantic syntax, grammatical syntax, and lexical item.

Research indicates that intermediate-grade children are not particularly skilled in the use of context clues. In a study by Hafner (1965), no significant posttest gains were made by fifth-graders after one month's instruction in recognition and use of contextual aids. Butler (1943), likewise, reported no significant differences in ability before and after experimental teaching of context clues to fifth and sixth graders. These findings are somewhat contraindicative to the findings of Harris and Howards concerning increasing ability in the use of context through the middle grades. Perhaps the teaching

techniques or contextual devices taught in the Hafner and Butler studies were not the optimal ones for developing the skill. Also, the skill may require breadth and depth of experience with reading, writing, and listening to language before growth is apparent and measurable.

The context itself, rather than the users of the context, has been the focus of a number of studies. Aborn, et al., (1950) found that the placement of a new word at the middle of a sentence rather than at one of the ends resulted in its being understood more often. Louthan's (1965) results suggested that nouns, specific verbs, and modifiers may be the most important carriers of meaning.

Ames (1966) investigated the use of contextual aids by mature readers. He concluded that knowledge of grammar was an important correlate to the use of context, with knowledge of word-order relationships, word classes, and syntactical patterns being associated with relative success in using context. Ames' work suggests the general influence of the grammatical syntax component of the adapted Fodor and Katz model described in the introductory chapter of this paper.

Reading Achievement in Boys and Girls

The results of the Howards study (1964) revealed no statistically significant differences between the means achieved by boys and girls on the Multiple-Meaning Word Test. Harris (1938) found no significant differences on total test scores of boys and girls. The results of these two studies are not congruent with a number of studies in reading which found differences favoring girls.

An example of a study with results clearly favoring girls follows. In a study of over 13,000 subjects, Gates (1961) measured the reading achievement of boys and girls on the Gates Reading Survey. The subjects ranged from second through eighth grade. Girls consistently scored higher than boys at all of the grade levels tested.

The Stroud and Lindquist study (1942) is an example of a study favoring girls by a significance level which decreased after fourth grade. Stroud and Lindquist using data obtained from 50,000 children in grades three through eight compared the achievement of boys and girls on the Iowa Every-Pupil Test of Basic Skills. In reading comprehension, the significance of the difference favoring girls decreased each year after fourth grade, reaching non-significance after grade six. The difference was greatest at the fourth grade level.

Results of a study by Hughes (1953) favored girls through fourth grade but not beyond that level. In her study of reading comprehension scores on the Chicago Reading Tests, reading achievement of boys and girls did not differ significantly after fourth grade. The inclusion of fourth and sixth graders in the Harris study and of fourth through sixth graders in the Howards study makes their findings congruent with those of Hughes.

Hypotheses Tested

The results of research on enrichment vocabulary in a contextual setting indicate that multiple meanings of a given word are not equally well known. In a natural reading situation, a reader must make the correct choice among known meanings or realize that none of his known

meanings fits the specific sentence context. Knowledge of a number of meanings of a word without the ability to determine the proper one for a given context would be insufficient for effective reading. To select the correct alternative, the reader uses grammatical syntax, semantic syntax, and the meanings of the polysemantic lexical item.

With third-grade subjects, Porter has focused on the semantic syntax by omitting a word in a sentence. With mature readers as subjects, Ames has focused on the role of grammatical syntax. The remaining component, the word and its meanings as they interact with semantic syntax, is the focus of the present study. Since Harris' and Howards' results have revealed that meanings are not equally well-known, the writer has chosen to compare the effectiveness of fourth-grade children's use of context to ascertain common and obscure meanings of polysemantic words. Fourth graders were selected for the study since Smith characterizes intermediate grade children as having more interest in people, things, and events than primary children do, as having "the greatest relative increase of immediate memory and power of prolonged retention", and as having "considerable capacity for reasoning (p. 32)." Interest, memory, and reasoning would seem to be important in the development of an enrichment vocabulary and the effective use of context with polysemantic words. Despite the increasing ability of this age group, Harris' and Howards' results show continuing problems with the use of context. Werner and Kaplan (1950) studied the development of word meaning through verbal context using an artificial word in six different contexts. They determined two developmental curves for chil-

dren's semantic ability. The second developmental curve "in which there is no fusion of word meaning and sentence" (p. 256) shows a decrease through the middle grades but continuing problems through the 12-6-- 13-6 -year-old age group. On the basis of their findings, fourth graders would be expected to experience some difficulty in using semantic syntax, context.

The necessity for using semantic syntax to ascertain the meaning of a multiple-meaning word is signaled more subtly than the necessity for using grammatical syntax. A basic awareness of the patterns of language may signal an inconsistency if words such as "a write" are juxtaposed. A reader who sees the words "a bay" might think of one of as many as four defensible meanings unrelated to one another but related to bay. None of the meanings, per se, would be preferable out of context. If a reader fails to attend to the signals within the semantic syntax, he may look at a multiple-meaning word and assign to it the meaning he knows best and uses most often. Thus, if an obscure meaning is appropriate in the context, the better-known meanings may interfere by diverting the reader from the semantic syntax. Smith (1963) describes seeing half of the children in a reading group draw a picture of mountains, a sun, and a red rose to illustrate the sentence "The great yellow sun rose high above the mountains." The best-known meaning of rose diverted the children from the grammatical and semantic syntax.

To ascertain which meanings of polysemantic words were common meanings and which were obscure, the present writer designed and

administered the Semantic Survey. The results of Louthan's study (1965) led the writer to select nouns as the form class considered since they are among the most important carriers of meaning. After the survey, the results were used in the construction of the Words in Context Test. The placement of the target words in the latter half of the sentence was based on Aborn's results.

In the test, children's use of context to determine common and obscure meanings was evaluated. To avoid differences conceivably attributable to the difficulty of the appropriate meaning or to the context in which it appeared, a second version using the same sentences with nonsense trigrams was devised as a check on the first version. The writer reasoned that if the concept or context were causing errors, then an obscure meaning should be equally hard to determine on both versions. Therefore, there would be little interaction of version and meaning. If interaction was apparent, it would seemingly be due to interference. Furthermore, the use of two versions allowed comparison of the differences in common and obscure errors on enrichment words with the same differences on hypothetical expansion items. The low-association value trigram may be regarded as the most difficult type of new or unfamiliar word having no established meaning; no prefixes, suffixes, or roots, and no reinforcing familiarity when decoded.

The Words in Context Test resembles Harris' test in that the answer choices constitute a miniature dictionary of noun meanings of the target word. The choice of alternatives was based on their being obvious distractors in a natural reading situation. The present test resembles Howards' MMWT in that the format is a multiple-choice

one. Each of the two tests also uses a single meaning of a given word for each item. The present test differs from its predecessors in using common and obscure meanings defined prior to its construction and concentrating on a common or obscure meaning for each target word rather than examining the common to obscure range for each.

Three specific hypotheses relating to children's performance on the test were tested. The hypotheses follow:

(1) Fewer errors will be made in determining common meanings than in determining obscure meanings on the Words in Context Test.

This hypothesis is based on prior research by Harris and Howards which indicated that the various meanings of multiple-meaning words are not equally well known.

(2) The difference between the number of errors on common and on obscure meanings will be larger when real words are used than when low-association value trigrams are substituted for those words.

Woodruff has observed, "When a symbol has acquired one meaning for a child it is harder to add another concept to the same symbol than it was to connect the first concept" (Woodruff, 1951, p. 289). As a consequence of this phenomenon obscure meanings of expansion vocabulary as represented by trigrams should be easier to determine than obscure meanings of enrichment vocabulary as represented by polysemantic words.

(3) Significant differences will exist between boys' scores and girls' scores on the Words in Context Test.

This hypothesis is based on research on reading achievement which tends to indicate higher achievement by girls through fourth grade.

Chapter II

METHOD

The primary purpose of the main experiment was to ascertain whether more commonly-known meanings of multiple-meaning words interfere with a fourth grader's ability to determine an appropriate obscure meaning in a sentence context. Assigning the same meaning to a different lexical form, a low-association value trigram, hereafter trigram, used in the exact context provides information about the interaction of semantic syntax and lexical item. The semantic syntax limits the meaning of a word in a specific sentence. If a common meaning is equally easy to determine when represented by a real word or by an arbitrarily-assigned trigram in the same context and an obscure meaning equally hard to determine in both conditions, then the concept or the context may be contributing to the problem. If a common meaning is not notably easier to determine than an obscure meaning when each is assigned to a trigram, then the additional difficulty of obscure meanings on a real word test version is not due to concept or context but rather to the interference of better-known meanings.

To design the main experiment, the writer needed information on meanings common or obscure to fourth graders and assurance that the trigram version would be comprehensible to the subjects. The compar-

ison of the real and trigram versions would be feasible only if the subjects were capable of working with the nonsense syllables. Thus, the present chapter includes the phases in the process of developing the Words in Context Test: (1) the development of the instrument for the semantic survey of common and obscure meanings, (2) the development and piloting of a preliminary form of the words in context test, (3) the development of a second form and the pooling of both forms, and (4) the procedure used in the main study which involved administering the pooled forms.

The Semantic Survey

A requirement for the study was prior determination of common and obscure meanings of polysemantic nouns. To compare fourth graders' efficiency in using context with usual and unusual meanings, it was necessary to know which meanings of polysemantic words were well-known and which were seldom-known. The writer's use of four meanings as alternatives on a survey was based on children's ability to work effectively with four choices as demonstrated by standardized tests. Four meanings were used consistently though some words had more meanings. Varying the number of alternatives for different items would have subtly varied the task.

Extant vocabulary measures were not satisfactory for determining common and obscure meanings. Standardized vocabulary tests treat expansion, i. e., different words, rather than enrichment vocabulary, i.e., multiple meanings of one word form. Harris and Howards, while dealing with enrichment items, used multiple-meaning

words functioning as different parts of speech. Their items, consequently, were not satisfactory sources for nouns having four meanings. The Teacher's Word Book of 30,000 words (Thorndike, Lorge, 1963) could not be used since, as Davis (1944) observed, "..no separation of the relative frequency of the several meanings that a given word may possess is made in The Teacher's Word Book (p. 169)." A Basic Vocabulary of Elementary School Children (Rinsland, 1945) is limited to word frequency in children's writing without a breakdown by meaning. Existing semantic counts such as West's (1953) and the Lorge-Thorndike (1938) count, while differentiating the frequency by meaning categories, are based on adults' rather than children's materials.

To determine the most common or most obscure meanings of a group of nouns, a self-report survey was developed. A self-report survey seemed preferable to a formal test since the intent was to establish norms rather than to evaluate the child's vocabulary. Lorge and Chall (1963) acknowledge a positive correlation among various methods of testing work knowledge. The methods include supplying a definition, using a given word in a sentence, recognizing a correct definition given multiple choices, and checking a word if its meaning is known. The survey approach used in this study most closely resembles the checking procedure described by Lorge and Chall (Lorge, Chall, 1963, p.147).

Development

As a first step in constructing the Semantic Survey, all words in the Thorndike Barnhart Beginning Dictionary (1964) were evaluated according to three criteria:

(1) four or more noun meanings,

(2) meanings which were not synonymous, as evidenced by separate listing on semantic counts,

(3) probable familiarity of at least one meaning to the average fourth grader, as evidenced by children's reading and writing.

Two hundred three words met the criteria. These words and four of their meanings chosen by the writer were copied directly from the dictionary. To confirm the probable familiarity to children of at least one meaning, two word frequency counts were consulted: The Teacher's Word Book of 30,000 Words (Thorndike and Lorge, 1963) and A Basic Vocabulary of Elementary School Children (Rinsland, 1945). The former indicates a word's representation in reading materials and the latter indicates representation in children's own writing.

Items from the high-frequency ranges of both sources were checked in West's A General Service List of English Words (1953). The West book, a semantic count based on adult materials, includes synonymous definitions under a single heading. Therefore, if meanings were listed separately, the word met the second criterion. The potential synonymity of definitions in a children's dictionary is illustrated by the verb meanings of the word stuff. Although five meanings were designated, the synonym cram or fill to capacity would have served for four of them. Synonymous definitions were avoided since the designation of a correct choice on the Words in Context Test would reflect the writer's personal preference or caprice. The West count lists the part of speech of each

meaning. This corroboration was necessitated by the omission of parts of speech in the Thorndike Barnhart Beginning Dictionary.

From among the words which fulfilled the three criteria, 60 words were chosen for the Semantic Survey. The number was limited to sixty since the task was a more complex one than the usual vocabulary test. Children were asked to rank the meanings according to their familiarity. Because of the complex nature of the task, the writer decided that using a three-page 30-item segment per sitting would be reasonable. More items might have overwhelmed the child before he started, resulting in minimal performance on all items.

With the exception of the frequencies of grade and truck, the frequencies of these 60 words are uniformly very high on the Thorndike-Lorge general list and the Rinsland list. The Rinsland rankings of grade and truck, however, were considered sufficiently high to warrant their inclusion. Table 1 shows the frequency rankings of the items on the Thorndike-Lorge and Rinsland lists.

The directions for the Semantic Survey and the survey itself are given in Appendix A. The basic directions follow: "Mark the meaning you know best with a number 1 on the blank next to its letter. If you know another meaning quite well, mark it 2. If you know a third meaning, mark it 3. If there is a meaning you use less than the others, mark it 4. If you don't know a particular meaning, leave that space blank." Children were instructed to read the target word and all four meanings before marking any meaning. On the first day the word bay was used as the sample. On the second day the word pad with four of its noun meanings was substituted as a chalkboard sample.

Table 1

Semantic Survey Words: Estimates of Frequency in General Reading from the Thorndike-Lorge List and in Children's Writing from the Rinsland List.

Word	Thorndike-Lorge Frequency	Rinsland Frequency
1. air	500 AA	233-1a5
2. ball	500 AA	468-1a3
3. bank	500 AA	71-1b5
4. bed	500 AA	826-1a2
5. bit	501 AA	134-1b2
6. blow	500 AA	74-1b5
7. board	501 AA	78-1b5
8. body	500 AA	90-1b4
9. box	500 AA	421-1a3
10. call	500 AA	202-1a5
11. charge	501 AA	118-1b2
12. class	501 AA	396-1a3
13. company	500 AA	72-1b5
14. cry	501 AA	113-1b3
15. day	500 AA	2384-1a1
16. face	500 AA	125-1b2
17. feeling	A	166-1b1
18. field	500 AA	141-1b1
19. floor	500 AA	185-1a5
20. front	500 AA	272-1a4
21. fruit	AA	152-1b1

Table 1 (continued)

Word	Thorndike-Lorge Frequency	Rinsland Frequency
22. game	501 AA	298-1a4
23. grade	44	1256-1a2
24. ground	500 AA	314-1a4
25. hand	500 AA	189-1a5
26. head	500 AA	363-1a3
27. home	500 AA	1815-1a1
28. house	500 AA	1395-1a2
29. life	500 AA	87-1b4
30. light	500 AA	192-1a5
31. line	500 AA	128-1b2
32. master	501 AA	101-1b3
33. part	500 AA	230-1a5
34. party	501 AA	351-1a3
35. piece	500 AA	154-1b1
36. place	500 AA	479-1a3
37. race	501 AA	81-1b4
38. rest	500 AA	221-1a5
39. roll	500 AA	86-1b4
40. room	500 AA	673-1a2
41. round	500 AA	128-1b2
42. run	500 AA	478-1a3
43. school	500 AA	4999-1a1
44. show	500 AA	378-1a3
45. side	500 AA	345-1a3

Table 1 (continued)

Word	Thorndike-Lorge Frequency	Rinsland Frequency
46. spring	500 AA	224-1a5
47. stand	500 AA	132-1b2
48. suit	501 AA	144-1b1
49. table	500 AA	253-1a4
50. tea	A	89-1b4
51. thing	500 AA	332-1a4
52. time	500 AA	2633-1a1
53. top	500 AA	287-1a4
54. train	500 AA	285-1a4
55. truck	23	83-1b4
56. turn	500 AA	117-1b2
57. wash	501 AA	112-1b3
58. way	500 AA	604-1a2
59. will	500 AA	5182-1a1
60. yard	501 AA	599-1a2

Rinsland first series of numbers - occurrence per 100,000 running words
Rinsland second series of numbers- The first number represents the thousand placement in frequency. The letter "a" represents the first 500 of that thousand; the letter "b" represents the second of that thousand. The last number represents the hundred within the a or b.

Thorndike-Lorge
500 = The most common 500
501 = The second most common 500 words used in reading surveyed

AA words occurred 100 times or more per million.
A words occurred 50-99 times per million.
44 - 44 times per million.
23 - 23 times per million.

In the survey each set of four definitions was alphabetized. The purpose was to systematically reorder the presentation of meanings so that the most common meaning would occur in all sequential positions.

Subjects

The survey was administered to 100 fourth grade children, 50 boys and 50 girls. The three participating schools were Blessed Sacrament School and St. James School in Madison, Wisconsin, and Mazomanie Elementary School in Mazomanie, Wisconsin. The combined population represented social classes ranging from lower to upper middle and both urban and rural environments. The diversity was deliberately sought to increase the representativeness of responses to the survey.

Procedure

The Semantic Survey was divided in half and the halves administered on two consecutive days at each school. The order of presentation of the halves to different children was counterbalanced to minimize possible first and second day effects. The time of day during which the survey was administered was controlled to eliminate diurnal differences on the two sections.

The subjects were allowed as much time as necessary to complete each section. To discourage hasty random ranking by slower children after other children finished, the subjects were instructed prior to the survey to do free reading when they finished. No papers were collected until everyone had completed the section. All children ranked at least one meaning for each word.

Results

Working times ranged from 12 to 35 minutes. Individual patterns of

ranking varied. Some children consistently ranked only one meaning; some consistently ranked all four meanings; the majority ranked varying numbers, i.e., one, two, three, or four, depending on the items.

The subjects' rankings were recorded with the number "5" assigned to any meaning left blank. Then the recorded responses were tallied and checked. The criterion level of 75 percent rankings of "1" for a particular meaning had been set by the writer as indicative of a commonly known meaning. The criterion level of 75 percent rankings of either "4" or "5" (blank) had been set for an obscure meaning. Table 2 shows words with common meanings, the meanings, and the percentages of subjects choosing those meanings. Table 3 presents the same information for words with obscure meanings. The 40 words which met the criterion for either common or obscure meanings were designated as the item pool for the Words in Context test. Thirty-four items, 17 common and 17 obscure, were chosen for the test. The meanings of light, ground, and place were eliminated because of the difficulty of writing restrictive contexts using them in the pre-determined part of the sentence. Turn and floor were used in their obscure meanings only. Truck was eliminated because of its Thorndike-Lorge and Rinsland rankings.

Each of the definitions of each word was numbered with the Oxford English Dictionary (Onions, 1966), meaning it closely resembled. The realignment allowed comparison of the Semantic Survey results with the Lorge-Thorndike adult semantic count (1938) to confirm the seeming reasonableness of the subjects' rankings of common and obscure meanings. Table 4 shows these comparisons. The writer examined the comparisons and pondered over the discrepancies.

Table 2

Percentages of Common Meanings of Multiple-Meaning Nouns
From the Semantic Survey

Common Noun	Meaning	Percentage of "1" Rankings
1. ball	a round object thrown, kicked or knocked in games	80
2. bed	anything to sleep or rest on	94
3. board	a thin piece of wood	81
4. body	the whole part of a man or animal	83
5. class	a group of pupils taught together	97
6. cry	a fit of weeping	87
7. face	front part of the head	94
8. floor*	part of the room to walk on	76
9. grade	a class in school	81
10. house	a building in which people live	90
11. master	person who rules or commands people or things	83
12. party	a group of people having a good time together	97
13. piece	a bit or scrap	82
14. place	a city, town or village	82
15. race	any contest of speed	98
16. room	a part of a house with walls of its own	90
17. side	either the right or left part of a thing	76
18. train	connected line of railroad cars moving together	96
19. truck	a strongly built automobile, cart or wagon for carrying heavy loads	85
20. turn *	change of direction	77
21. way	direction	79

Table 3

Percentages of Obscure Meanings of Multiple-Meaning Nouns from the Semantic Survey

Obscure Word	Meaning	Percentage of "4" or "5" Rankings
1. air	a look, manner	91
2. bank	sloping of an airplane to one side	84
3. bit	a tool for drilling	80
4. blow	an attack	81
5. box	a small tree or shrub	87
6. floor*	the right to speak	82
7. fruit	result of anything	89
8. game	scheme, plan	89
9. ground	a foundation for what is said	76
10. hand	measure used in giving the height of horses	83
11. head	crisis	87
12. home	place where a thing is especially common	85
13. light	knowledge, information	83
14. line	a kind or brand of goods	95
15. roll	a deep loud sound	79
16. suit	request, asking	81
17. tea	the leaves	79
18. turn*	deed, act	82
19. wash (1)*	a disturbance in the air made by an airplane	85
(2)	a thin coating of color or metal	78

* More than one meaning met the criteria.

Table 4

Semantic Survey Common and Obscure Results Compared to Semantic Count Based on Oxford English Dictionary Listings

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per mille
air			
A) a look, manner	X-O	13	26
B) a melody, tune, song		18	3
C) a mixture of gases surrounding the earth		1	386
D) sky		3	237
ball			
A) anything round		sb.1 - 10	69
B) a bullet		sb.1 - 5	97
C) a large party for dancing		sb.2 - 2	49
D) a round object thrown, kicked, or knocked in games	X-C	sb.1 - 4	521
bank			
A) ground next to a river		sb.1 - 8	218
B) a long pile or heap		1 - 1	34
C) a place for keeping money		3 - 7	513
D) sloping of an airplane to one side	X-O	1 - 12	not included
bed			
A) anything to sleep or rest on	X-C	1	217
B) a flat base on which anything rests		10	3
C) layer		13	19
D) a piece of ground where plants are grown		8	67
bit			
A) part of a bridle that goes in a horse's mouth		sb.1 - 8	12
B) a short time		2 - 6	31
C) a small amount		2 - 4	543
D) a tool for drilling	X-O	1 - 6	not listed

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
blow			
A) an attack	X-O	sb.1 - 4b	35
B) a hard hit		1 - 1	178
C) a hard wind, a gale		2 - 1a	3
D) a sudden happening that causes loss or shock		1 - 2	29
board			
A) food served on a table		7	20
B) a group of persons managing something		8b	574
C) a table to serve food on		6	13
D) a thin piece of wood	X-C	1	65
body			
A) a group of persons		15	129
B) the main part of anything		7	32
C) substance		25	6
D) the whole part of a man or animal	X-C	1	381
box			
A) a blow with an open hand		sb.3 - 1	not listed
B) a container made of wood		2 - 1	17
C) a small shelter		2 - 13	not listed
D) a small tree or shrub	X-O	1 - 1	not listed
class			
A) a group of pupils taught together	X-C	3	appropriate section missing from the Lorge Thorndike volumes
B) a group of things of the same kind		6	
C) quality		5	
D) a rank of society		2	
cry			
A) a fit of weeping	X-C	10	5
B) a loud call, shout		2b	25
C) the noise of an animal		11	25
D) slogan, call to action		9	6

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
face			
A) front part of the head	X-C	1	279
B) look, expression		6	129
C) the right side, the surface		11	22
D) an ugly look, a peculiar look		6b	8
floor			
A) flat surface of anything		sb.1 - 7	53
B) part of a room to walk on		1	435
C) the right to speak	X-O	4	35
D) story of a building		5	176
fruit			
A) part of a plant in which the seeds are		5	not listed
B) product of a tree that is good to eat		2	522
C) result of anything	X-O	7	19
D) useful product of plant growth		1	12
game			
A) animals and birds that are hunted		11	83
B) a contest with certain rules		4	371
C) scheme, plan	X-O	5	105
D) a score in a game		6e	2
grade			
A) a class in school	X-C	4	110
B) a degree of quality or value		5	299
C) number or letter that shows how well one has done		5b	171
D) the slope of a road		10	61

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
hand			
A) cards held by a player		23	2
B) the end of the arm		1	433
C) a hired worker		8	13
D) measure used in giving the height of horses	X-O	20	1
head			
A) crisis	X-O	31	1
B) lead, chief person		25	83
C) mind, understanding		2a	52
D) top part of the body where eyes, ears and mouth are		1	469
home			
A) country where one was born		6	33
B) the goal in many games		9	2
C) place where a person or family lives		2	341
D) place where a thing is especially common	X-O	7	11
house			
A) an assembly for making laws		4d	148
B) a building in which people live	X-C	1	603
C) a business firm		4f	23
D) a family, especially a noble family		6	46
line			
A) a kind or brand of goods	X-O	sb.2 - 30	1
B) a long narrow mark		7	27
C) a piece of rope, cord, or wire		1	7
D) a row of persons or things		19	30

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
master			
A) an expert		sb.1 - 12	not listed
B) person who rules or commands people or things	X-C	1	20
C) a picture by a great artist		15b	3
D) title of respect for a boy		22	59
party			
A) a group of people having a good time together	X-C	9	45
B) a group of people wanting the same kind of government		6b	158
C) one who takes part in, aids, or knows about		12	9
D) a person		14	17
piece			
A) a bit or scrap	X-C	1	100
B) a coin		13	73
C) a single composition in art		17	26
D) a single thing in a set		6	20
race			
A) any contest of speed	X-C	sb.1 - 10	243
B) a group of people of the same kind		2 - 8	34
C) a group of persons having the same ancestors way back in the past		2 - 2	9
D) a strong or rapid current of water		1 - 6	not listed
roll			
A) a deep loud sound	X-O	sb.2 - 3	2
B) a kind of bread or cake		1 - 10	27
C) a list of names		1 - 4	16
D) motion from side to side		2 - 1	14

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
room			
A) a part of a house with walls of its own	X-C	sb.1 - 8	851
B) the people in a room		1 - 8d	not listed
C) opportunity		1 - 4	1
D) space		1 - 1	14
side			
A) either the right or left part of a thing	X-C	sb.1 - 12	81
B) part of a family, line of descent		sb.1 - 19	6
C) slope of a hill		sb.1 - 6	22
D) a surface that is not top, bottom, front, or back		sb.1 - 4	47
suit			
A) a case in a law court		7	6
B) one of four sets of cards in a deck		20	32
C) request, asking	X-O	11	19
D) set of clothes		19b	318
tea			
A) an afternoon party at which tea is served		4	188
B) a drink made by pouring water over leaves		2	350
C) the leaves	X-O	1	250
D) a light meal		4	188
train			
A) connected line of railroad cars moving together	X-C	sb.1 - 16	318
B) a group of followers		sb.1 - 9	20
C) a line of people, animals, etc.		sb.1 - 11	12
D) part that hangs down and drags behind		sb.1 - 5	5

Table 4 (continued)

Word Its Meanings	Common or Obscure Meaning	O.E.D. Listing by Number	Lorge Thorndike Semantic Count per Mille
turn			
A) change of direction		8	7
B) deed, act	X-O	22	not included
C) motion like that of a wheel		2	4
D) time or chance to do something		28	27
wash			
A) a disturbance in the air made by an airplane		not included	not included
B) liquid for special use		3	not included
C) a quantity of clothes washed or to be washed		2	8
D) a thin coating of color or metal	X-O	5	not included
way			
A) direction	X-C	sb.1 - 9	84
B) distance		8	32
C) manner, style		14	239
D) method, means		14	239

The discrepancies are logically explained when interpreted as legitimate differences in children's and adults' vocabularies. The noteworthy differences in obscure meaning were on the words blow, game, and tea. Blow meaning attack and game meaning scheme, plan are figurative in adult language and, therefore, especially difficult for children. Adult usage of tea meaning tea leaves is relatively common. Children born in the era of convenience foods, such as tea bags and instant tea, however, may never have seen tea leaves. The noteworthy differences in common meanings were on the following words: board, cry, grade, master, party, and way. In the cases of board and party, children are unconcerned with the managerial and political groups most often referred to when adults use those words. Conversely, grade meaning a class in school and cry meaning a fit of weeping are salient features in a child's world. The meaning of master chosen by the subjects is that used in folk tales and fairy tales usually featured in readers at their level. Finally, subjects' choice of direction as the best-known meaning of way reflects their familiarity with the more concrete meaning as opposed to the relatively abstract method, means definition common to adults. Since the Semantic Survey results were generally congruent with the Lorge-Thorndike count, differing only in interpretable ways, the writer accepted the results as indicative of fourth graders' common and obscure meanings of given polysemantic words.

Words in Context Test A

The Semantic Survey results provided a pool of meanings commonly-

known or seldom-known by fourth graders. Since children taking the survey had not exercised their prerogative of asking questions, the writer assumed that the definitions were generally readable and comprehensible. These definitions, unaltered, were designated as the four answer choices for each test item. The four definitions were used in a multiple-choice format.

Development

The real word version of Test A was constructed in the following manner. Each of the 34 words was put into a simple, declarative sentence 11 $\pm$ 2 words in length. Each target word appeared in the last half of its sentence. An effort was made to achieve an unambiguous, restrictive context, i.e., only one of the four answer choices being satisfactory in that setting. The target words served various syntactic functions in the sentences, usually as direct objects or objects of prepositions.

The 34 sentences were read for clarity, fourth-grade readability, and mutual exclusiveness of answers by a person in each of the disciplines: reading, psycholinguistics, language arts, concept learning, and library science. The test was also reviewed by a person experienced in reading test construction. Revisions were made based on the suggestions elicited.

Following revision, the trigram version of the test was constructed. It varied from the first version in that low-meaningfulness trigrams common to the Glaze and Krueger lists (Underwood and Schulz, 1960) were substituted for the target nouns. Trigrams which had a zero

percent association value on the Glaze list and 18 to 49 percent association value on the Krueger list were selected. From the 54 trigrams which met the criteria for low-meaningfulness, 34 were chosen for the trigram version of the test. Trigrams were assigned to items in such a way that no trigram began with the same letter as the noun which it replaced. Except for the constraint the 34 trigrams used were chosen by whim. A friend of the writer selected the ones she liked.

The item order, common to both forms, was established by the use of a table of random numbers. The definitions, alphabetically ordered on the Semantic Survey, were randomly rearranged. A table of random numbers was used to determine the revised order which had equal numbers of answers A, B,C, and D, except for an extra B and C. Test A, real word and trigram version, is given in Appendix B.

Purposes of the Pilot

The pilot study of Test A had four objectives:

(1) to determine the appropriateness of the reading level of the test for fourth graders,

(2) to determine whether the trigram version was comprehensible to fourth graders,

(3) to ascertain whether the test detected differences in ability to determine common and obscure meanings of words in sentence contexts, and

(4) to obtain an estimate of the time required and of the suitability of the directions.

Subjects

Subjects were 25 fourth graders at Blessed Sacrament School in Madison, Wisconsin. None of these children were members of the class which took the Semantic Survey. Nine boys were assigned in approximately equal numbers to real and trigram versions; 16 girls were assigned in equal numbers to real and trigram versions.

Procedure

Test A, both versions of which are included in Appendix B, was administered in one sitting. The written directions, also located in Appendix B, did not allude to the fact that there were two versions. The omission was deliberate. The writer sought to avoid the children's expecting very different tests. The difference was acknowledged in the oral directions accompanying the chalkboard sample: "Some of you will be working with real words. Others will be working with made-up words. We will do one sentence using each kind of word..". The writer and the subjects read aloud the following sentences and the appropriate definitions: "The poodle was lame because he hurt his xox," and "The water was very deep in the bay." The answer for each of these examples was determined following the procedures outlined in the directions.

The writer, who administered the test, enlisted the help of the classroom teacher to observe the subjects' reactions during the test.

Results

The time required by the subjects to complete the test ranged from 10 to 30 minutes. The technique of having early finishers read

library books was used to minimize pressure on children who worked more slowly. Children appeared to listen to the directions and to follow them on the chalkboard sample. Their teacher and the writer circulated during the test to be available for questions, but children followed the directions without apparent difficulty. The time requirement and the directions, therefore, were considered satisfactory for the main experiment.

Subjects who had the trigram version were observed carefully by the teacher and the writer. These subjects worked without the restless movements, the sighs, the daydreaming, the frequent inattention to task, or the slumped posture which often indicate a child's frustration with a task. The teacher and the writer concurred in the judgment that the trigram test was not too difficult for fourth graders.

A mixed-model univariate repeated measures analysis of variance (Hays, 1963, Chapters 12 and 13; Dixon and Massey, 1957, Chapter 10) with two between-subject factors (sex: boy and girl; and version: real and trigram) and one within-subject factor (meaning: common and obscure) was performed using least square estimators in the full rank model to account for unequal cell frequencies. The results of the within-subject analysis indicated that the number of errors on common meanings (1.62) was significantly different from that on obscure meanings (3.60) ($F = 10.64$, $df = 1/21$, $p<.005$). The meaning factor was found to interact with version ($F = 6.40$, $df = 1/21$, $p<.01$). That is, there was a relatively larger effect of meaning as defined by c-o for real words (-3.46) than for trigrams (-.60). The interaction of meaning and sex was non-sig-

nificant. In the between-subjects analysis, there were no significant main effects, and the interaction of sex and version was non-significant. Results indicate sensitivity to effects of polysemantic words.

The range of errors on real words with common meanings was 0-4 with a mean of .84. The range on trigrams with common meanings was 1-6 with a mean of 2.3. The range of errors on obscure meanings of real words was 0-13 with a mean of 4.3. The range of errors on obscure meanings of trigrams was 1-5 with a mean of 2.9. The reading level of both versions was considered appropriate in light of the ranges and means of errors because children did not have inordinate difficulty with the items.

Words in Context Test B

Subsequent to the development, piloting, and analysis of Test A, a second form of the test was developed to insure that the effect noted for Test A was not unique to the particular sentences used in that form.

Development

The same guidelines were followed in constructing the second form as were followed in constructing the first form: simple, declarative sentences; 11 $\pm$ 2 words in length; restrictive contexts; and placement of the target noun or trigram in the last half of the sentence. The second form was reviewed by the same people who had reviewed the first form. Revisions were made based on suggestions elicited. Since Test B was considered by the writer and the readers cited above as

essentially parallel to Test A, it was not piloted prior to use.

Pooling Procedure

To minimize the effects due to the order in which the forms had been constructed, Tests C and D were developed from a pool of all items from Tests A and B. The coin-flipping technique was used to decide on which form each sentence would appear. The 34 trigrams originally chosen were used on Tests C and D, trigram version (II). The 34 real words, likewise, were used on the real word version (I) of the two forms. Test C, versions I and II, and Test D, versions I and II, used in the main experiment are given in Appendix C.

Words in Context Tests C and D

Purpose

The purpose of the study was to consider children's ability to determine obscure meanings of multiple-meaning words in sentence contexts. The obscure meanings were examined in relation to common meanings. Two possible sources of differences between ease in determining common and obscure meanings in sentence contexts are the difficulty of the concept involved and the difficulty of the sentence context. To evaluate the role of these sources, common and obscure meanings were arbitrarily assigned to trigrams and placed in the same contexts as the common and obscure meanings of real words had been. The writer reasoned that if the concept or the context difficulty were contributing significantly to children's errors, the number of common errors would be consistent over real and trigram versions as would the number of obscure

errors. If noteworthy differences between common and obscure errors existed on the real word version, but not on the trigram version, the remaining source of difficulty, i.e., interference by better-known meanings of real words in the determination of obscure meanings in sentence contexts, would be the major cause of difficulty in handling obscure meanings.

Subjects

The subjects were 64 fourth graders at Black Earth Elementary School. The children were randomly selected from a total population of 70 students in 3 fourth grades. Black Earth is a small community located between Mazomanie and Madison, Wisconsin, so the experiences of the children were assumed to be comparable to those of a number of the children surveyed in the semantic survey.

The range of the subjects' scores on the Otis Intelligence Test was 85 to 135 with a preponderance of the scores in the 90 - 110 range. Grade equivalents of the raw scores on reading tests on the California Achievement Tests administered in the spring of 1969 range from 2.7 to 5.5 with a preponderance of the scores in the third and fourth grade ranges. Psychometrically, therefore, the subjects could be described as average.

Subjects were stratified according to sex and then randomly assigned to one of the four tests, C I, C II, D I, D II. The three classes were pooled for stratification and random assignment, not randomized class by class, i.e., blocked by teacher, since the school program involved separate groups for homeroom, reading,

and math. An individual subject, therefore, might have had one, two, or three teachers during a given day.

Procedure

The Words in Context Tests C and D were administered in one sitting. Two classes were tested in the morning with the writer and an assistant each administering the test to one class. The writer administered the test to a third class in the afternoon.

The procedures used in the pilot study, i. e., one set of directions for both versions, circulation by the writer during the test, and free reading until everyone had finished, were repeated. In the afternoon class, one subject worked very slowly completing one-half of the test in 30 minutes. When everyone else had finished at the end of 40 minutes, the writer conferred with the teacher and arranged to take the boy to another room to complete the test. Part of the 53 minutes used by this subject was taken by his elaborate marking system. Rather than using an X or a check next to the correct answer, he drew a tiny swastika for each of the 34 answers. Despite the method of marking, his error score, which was lower than the mean error score, reflected care in selecting answers.

Two girls who were absent on the day of the original testing were tested by the writer on the following morning.

Following the testing, a fourth grade teacher observed to the writer that the children in her class had worked "steadily and confidently." The teacher attributed their willing cooperation to the following test features: the real word tests involved words with which the children felt very secure, the sentence contexts in both versions were straight-

forward, and the item difficulty did not increase from that initial items to that of final items.

Experimental Design

A 2 x 2 x 2 x 2 factorial design with repeated measures on the last factor was employed. The factors were sex of child (boy or girl), test form (C or D), test version (real or trigram), and meaning (common or obscure). Two scores were obtained for each subject: the first being the number of errors on the 17 test items with common meanings and the second being the number of errors on the 17 items with obscure meanings. Error scores on the Words in Context Test were chosen rather than correct answer scores because the hypotheses dealt with the number of errors for each type of meaning. An analysis of variance was carried out. In the within-subjects analysis, the dependent variable was the derived score of common errors minus obscure errors. This analysis was used to test the first two hypotheses: a difference between the number of errors on common and obscure meanings and a smaller difference in the number of errors made on common and obscure meanings on the trigram version than on the real word version. In the between-subjects analysis, the dependent variable was the derived score of total errors. This analysis was used to test the third hypothesis: better performance on the test by girls than by boys. Factorial combination of the independent variables, sex, form, and version, resulted in eight experimental groups. Subjects were stratified according to sex and randomly assigned to one of the four tests.

Chapter III

RESULTS AND DISCUSSION

The three hypotheses stated in Chapter I follow:

1) Fewer errors will be made in determining common meanings than in determining obscure meanings.

2) The difference between the number of errors on common and on obscure meanings will be larger when real words are used than when low-association value trigrams are substituted for those words.

3) Significant differences will exist between the boys' and girls' scores on the Words in Context Test.

Results

The hypotheses were tested by a mixed-model univariate repeated measures analysis of variance (Hays, 1963, Chapter 12 and 13; Dixon and Massey, 1957, Chapter 10). In the between-subjects analysis, common and obscure meaning errors were summed to form a total score (c + o) on the meaning factor which served as the dependent variable. The independent variables were sex (boy and girl), form (C and D), and version (real and trigram). This analysis was used to test overall performance on the use of context. The analysis pertained to the third hypothesis. In the within-subjects analysis, the dependent variable was a difference score on the meaning factor calculated by subtracting the number of obscure errors from the number of common errors (c - o). The independent

variables were sex, form, and version. This analysis was used to test for differences between common and obscure meanings. The within-subjects analysis pertained to the first and second hypotheses. The significance level adopted for each hypothesis was .05.

The form factor based on the use of two forms of the Words in Context Test was not significant as a main effect in the between-subjects analysis; nor did it interact with any other between-subject or within-subject factors. Since each source involving the form factor was non-significant, a table of means collapsed over the two forms and corresponding to the analysis of variance table is presented as Table 5. Tables of means and standard deviations of error scores for common meanings and obscure meanings by experimental groups are presented in Appendix D.

The results of the analysis are presented in Table 6. In the between-subjects analysis, the effect of the sex factor on total error scores (hypothesis 3) was significant ($p < .02$). The mean total error score for girls was 9.96; for boys, 13.94. Other effects and interactions were non-significant.

Hypotheses 1 and 2 were tested in the within-subjects analysis. In relation to hypothesis 1, the main effect of meaning was significant ($p < .0001$) and in the expected direction; common meanings produced fewer errors (4.58) than did obscure meanings (7.36). However, in line with hypothesis 2, the meaning factor was found to interact with version ($p < .0001$). That is, there was a relatively larger effect of meaning as defined by c - o for real words (-4.81) than for trigrams (-.75).

Table 5

MEAN COMMON, OBSCURE, TOTAL (c + o) AND DIFFERENCE (c - o) SCORES BY EXPERIMENTAL GROUPS AND ACROSS SEX

Sex	Version	Meaning		Total	Difference
		Common	Obscure	c + o	c - o
Boy	Real	5.06	9.50	14.56	-4.44
	Trigram	5.94	7.38	13.32	-1.44
Girl	Real	2.07	7.26	9.33	-5.19
	Trigram	5.26	5.32	10.58	-.06
Across Sex	Real	3.57	8.38	11.95	-4.81
	Trigram	5.60	6.35	11.95	-.75

Table 6

ANALYSIS OF VARIANCE TABLE FOR ERRORS ON THE TEST

Source (Between Subjects)	MS	df	F-ratio	Probability
Sex	256.0	1	5.89	.02*
Form	76.56	1	1.76	.19
Version	0.00	1	0.00	1.00
Version x form	0.56	1	.01	.91
Version x sex	25.00	1	.58	.45
Sex x form	0.56	1	.01	.91
Sex x form x version	.06	1	.00	.97

* Significant at the indicated level

Source (Within Subjects)	MS	df	F-ratio	Probability
Meaning	495.08	1	51.34	.0001*
Sex x meaning	1.63	1	.16	.69
Form x meaning	6.31	1	.65	.42
Version x meaning	264.13	1	27.38	.0001*
Version x form x meaning	.94	1	.10	.75
Version x sex x meaning	18.00	1	1.87	.18
Sex x form x meaning	9.56	1	.93	.34
Sex x form x version x meaning	9.56	1	.93	.34

* Significant at indicated level

Pertinent to the hypotheses, the mean for common errors on the real word version was 3.57; on the trigram version, 5.60. The mean for obscure errors on the real word version was 8.38; on the trigram version, 6.35. An examination of the four means in Table 5 shows that the meaning effect is in the same direction for both real words and trigrams, but the effect is greater for real words than for trigrams. The interactions of both sex and form with meaning on the difference score were non-significant.

The three hypotheses, which were confirmed by the analysis of variance, will be discussed in the order in which they are presented on page 50. A discussion of test characteristics follows the discussion of the hypotheses.

Differences Between Common and Obscure Errors

Results of studies by Harris and Howards had indicated that the various meanings of a given multiple-meaning word were not equally well known. Children were not equally successful with discerning the various meanings in sentence contexts. Logically, they were more successful with commonly-known meanings than with obscure meanings.

As described in Chapter II, a semantic survey was designed and administered to determine common and obscure meanings prior to the construction of the Words in Context Test. The present hypothesis extends the results of the Semantic Survey by indicating that meanings which were checked as commonly-known when presented in isolation on the survey were more easily recognized in context. The obscure meanings were less-known in isolation and less easily determined in a sentence context.

The purpose of prior determination of the two types of meaning was to facilitate examination of the interaction of each type of meaning with the semantic syntax through the use of two versions of the Words in Context Test.

Differences Between Common and Obscure Errors as a Function of Version

The influences of sentence context and difficulty of word meaning were examined by attaching each meaning to a low-association value trigram as well as to a real word. If the remainder of the sentence were the primary influence on ascertaining common and obscure meanings, then common meanings would have been equally easy across real and trigram conditions, and obscure meanings would have been equally hard across both. Likewise, if the meaning itself had been easy to understand or hard to understand, common errors, per se, and obscure errors, per se, would have been very similar across versions. In either of these cases, the difference scores on versions would not have been significantly different.

In Figure I, the mean common and mean obscure errors as a function of version are presented. Inspection of the figure shows that while total means by versions are the same, common and obscure errors on trigrams are quite similar while common and obscure errors on real words are markedly disparate.

Similar results were obtained on the pilot study with a mean total error score of 5.40 for both real words and trigrams but a mean difference score of -3.51 for real words and -.40 for trigrams. The interaction of version and meaning was clearly similar to that for the ex-

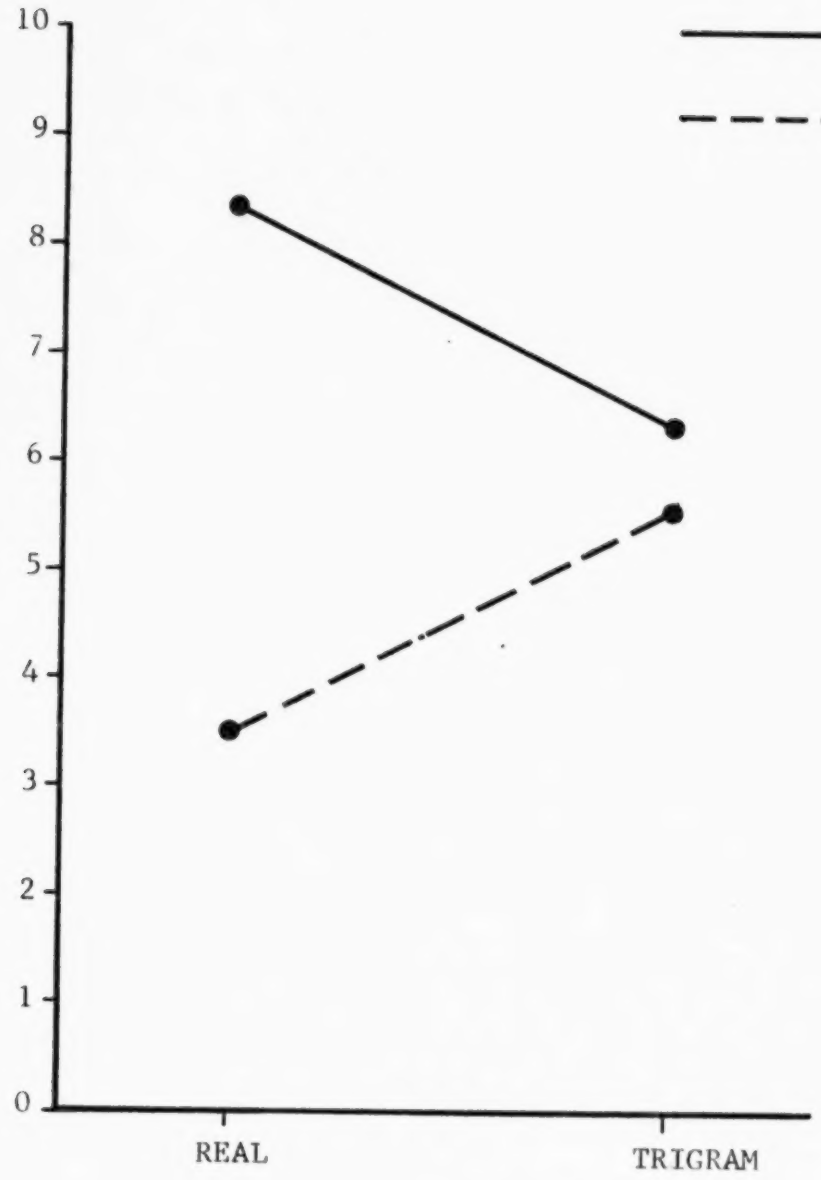

Figure 1

Mean Common and Mean Obscure Errors
as a Function of Version

periment proper.

Predictably, the common meaning was easier to determine when it was represented by a real word rather than a trigram. When an obscure meaning was the appropriate answer, however, fourth-grade subjects had greater difficulty ascertaining meaning designated by a real word than by a trigram. As pointed out earlier, the trigrams could be construed as expansion vocabulary. Thus, on the experimental task, an obscure meaning was easier to determine when it was represented by the equivalent of a totally new word form than by a known word form. Since subjects were more successful using the semantic syntax and trigram to ascertain obscure meanings, the interaction of semantic syntax and real words appeared to be diminished by interference from better-known meanings when an obscure meaning was involved.

Differences Between Boys' and Girls' Performance on the Test

The results of the analysis of the total scores were congruent with results of earlier research by Hughes (1953), Gates (1961), and Stroud and Lindquist (1942) on sex differences in reading ability for fourth graders.

The findings of the present study regarding sex differences in the use of context with multiple-meaning words differ from those of Harris (1938) and Howards (1964). The present experimental groups were composed exclusively of fourth graders while Harris' groups were fourth and sixth graders and Howards' groups were fourth through sixth graders. In neither study was there a significant difference between the performance of fourth-grade boys and girls. In the pilot study of the

Words in Context Test, differences between boys' and girls' performance were non-significant. Since the pilot group could be described as having above average ability (as indicated by teachers' comments), the difference between the experimental group results and the pilot group results may be due to general reading ability differences or intellectual ability differences.

For purposes of the present study, the fact that boys and girls were both influenced by interference from better-known meanings when determining obscure meanings in sentence contexts is more important than whether real differences exist in their ability to use context to determine meaning.

Test Characteristics

Reliability estimates are based on data from 64 fourth graders who participated in the experiment.

The Hoyt internal consistency reliabilities (Hoyt, 1941) for the four tests, C-real, C-trigram, D-real, and D-trigram, are presented in Table 7. The reliabilities for the Words in Context Test are uniformly high.

Table 7

Hoyt Internal Consistency Reliabilities for the Words in Context Tests

Test	Version	Hoyt Reliability
C	Real	.8957
C	Trigram	.8836
D	Real	.8732
D	Trigram	.8477

Item statistics were not examined for individual items because the

alternatives for each item were fixed by the constraint of using actual meanings of the target words. By definition, therefore, the alternatives were not amenable to change.

On the basis of the Semantic Survey, the three distractors for a common meaning were considered less-known than the correct alternative, and the three distractors for an obscure meaning were considered better-known than the correct alternative. In the correction of the tests, all three distractors were given equal weight. Thus, an error on an obscure meaning reflected choice of any one of the three better-known meanings, rather than reflecting only the choice of the best-known meaning.

The number of errors on common meanings on all forms of the test is presented in Table 8 and the number of errors on obscure meanings on all forms of the test is presented in Table 9. Inspection of Table 8 shows a range from 4 errors on board to 32 on side. Excepting errors on the words, board, way and piece, the number of errors on trigrams was consistently larger than the number on real words. Inspection of Table 9 shows a range from 12 errors on roll to 49 on head. With the exception of errors on the words wash and head, the number of errors on real words was consistently larger than or equal to the number of errors on trigrams. Fifty percent or more of the subjects made errors on the following words: air, tea, head, suit, and blow. The words air, head, suit, and blow have an idiomatic or figurative quality in their obscure meanings. Figurative language was not universally difficult, however, as evidenced by the lower error totals for the obscure meanings of home, fruit, turn, game, and floor.

Table 8

Numbers of Errors Made on Common Meanings on All Forms

	Real		Trigram		Total based on a possible 64
	C	D	C	D	
house	0	3	9	8	20
party	3	1	5	0	9
class	5	3	5	5	18
race	3	1	3	2	9
ball	3	2	5	5	15
board	2	0	0	2	4
side	9	6	10	7	32
face	3	3	6	7	19
way	4	3	4	2	13
room	6	5	10	7	28
train	2	0	8	1	11
piece	2	8	3	4	17
bed	5	4	7	8	24
cry	4	1	5	5	15
grade	3	1	3	7	14
body	7	7	8	9	31
master	2	3	5	4	14

Table 9

Numbers of Errors Made on Obscure Meanings on All Forms

	Real		Trigram		Total based on a possible 64
	C	D	C	D	
wash	7	6	9	5	27
roll	3	3	4	2	12
hands	4	5	5	3	17
home	6	4	5	5	20
air	11	12	10	10	43
fruit	10	7	2	3	22
tea	13	11	12	7	43
box	9	7	4	1	21
bit	7	3	4	5	19
line	10	6	6	4	26
turn	7	8	7	8	30
game	6	5	5	3	19
head	13	10	14	12	49
bank	9	9	7	4	29
suit	12	8	11	9	40
blow	12	14	3	9	38
floor	8	3	3	2	16

Chapter IV

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary and Conclusions

To determine the appropriate meaning of a multiple-meaning word in a sentence context, the reader uses grammatical and semantic syntax and the word itself, with its range of meanings within the requisite form class. The appropriate meaning interacts with the meanings of the remaining words in the sentence to allow a single logical interpretation. Results of research on the use of context, i.e., grammatical and semantic syntax, in the middle grades have indicated that intermediate grade children have difficulty with this reading skill. For example, Harris (1938) and Howards (1964) found that children demonstrated differing competence in using context with various meanings of the same word.

The present study was designed to investigate children's ability to use the semantic syntax in conjunction with two types of meanings of polysemantic words. Representatives of the two types, common and obscure, were determined in a preliminary phase of the study through the administration of a semantic survey. The survey consisted of 60 words, each accompanied by four definitions of it taken from a children's dictionary. One hundred fourth graders from three different schools, one rural and two urban, ranked the familiarity of the definitions of

each word from best known through least known. Primarily monosyllabic, the words were chosen for the survey according to three criteria: (1) four or more noun meanings, (2) non-synonymous meanings, and (3) probable familiarity of at least one meaning to the average fourth grader. Following the survey, definitions ranked "1" by 75 percent of the subjects were labeled common meanings, and definitions ranked "4" or left blank by 75 percent of the subjects were labeled obscure meanings. The Lorge-Thorndike semantic count was consulted to confirm the seeming reasonableness of children's choices by comparing them with a frequency-of-meaning count based on adult materials.

When common and obscure meanings had been distinguished, 34 words, 17 with common meanings and 17 with obscure meanings, were used to construct the pilot form of the Words in Context Test. The test consisted of simple, declarative sentences 11 $\pm$ 2 words in length with an underlined target word placed in the last half of the sentence followed by a miniature dictionary of four noun meanings of the target word. After construction of this version, a second version was constructed differing from the first only in the use of a low-association value trigram as a substitute for the target real word. The purpose of the second version was to replicate the semantic syntax using a different lexical item so that the interaction of semantic syntax and lexical items in the two situations could be compared.

The pilot form of the Words in Context Test was administered to 25 fourth graders. Results of this tryout indicated that the test was sensitive to differences in efficiency of using context with common and

obscure meanings when both versions were represented. A second finding was that fourth-grade subjects were as capable of working with trigrams as with real words.

To preclude the possibility that the effects noted in the pilot study were unique to the particular form of the test, a second form of the test was devised using the same real words and trigrams and following the same grammatical constraints as the first form. The items from the two forms, A and B, were pooled using a coin-flipping technique to devise forms C and D.

Forms C and D, versions I (real words) and II (trigrams), of the Words in Context Test were administered to 64 subjects from 3 fourth-grades which were stratified by sex and randomly assigned to one of the four tests. An analysis of variance was carried out on the error scores for the tests. In the within-subjects analysis, a difference score, common meaning errors minus obscure meaning errors, was used as the dependent variable with sex, form, and version as independent variables. Interactions involving meaning with either sex or form were non-significant. The interaction of version and meaning, however, was significant, as was the main effect of meaning.

The differences in the number of errors were consistently negative, i.e., more errors were made on obscure meanings than on common meanings in both conditions. The mean difference was greater on real words than on trigrams, -4.81 as compared to -.75. Inspection of the means of common meaning errors reveals that fewer errors were made in the real word condition than in the trigram condition. Inspection of the

means of obscure meaning errors, conversely, reveals that more errors were made in the real condition than in the trigram condition.

Children were more successful at discerning obscure meanings when they were assigned to trigrams which may be construed as hypothetical new words. The problems a child has with obscure meanings represented by frequently-used multiple-meaning words in sentences seem to be due to interference by better-known meanings of the familiar words diverting him from the semantic syntax. Children were more successful at discerning common meanings when they were represented by real polysemantic words than by trigrams. The success a child has with common meanings of real words seems to indicate that common meanings interact directly with the semantic syntax making the appropriate meaning of a familiar word easier to determine than the same meaning assigned to a hypothetical new word.

The between-subject analysis of variance was carried out using a total score, common meaning errors plus obscure meaning errors, as the dependent variable with sex, form, and version as independent variables. In this assessment of general ability to use context, there was a significant difference between scores of boys and girls with the difference favoring girls. The results differed from those of Harris and Howards and from the results of the pilot study. Although girls were more efficient at using context than boys, the same patterns of errors on common and obscure meanings were apparent for both boys and girls. Thus, the interference effect for obscure meanings occurred at different levels of proficiency in the use of

context, i.e., more errors occurred on obscure meanings of real words than on obscure meanings of trigrams on girls' scores as well as on boys' scores.

Implications for the Teaching of Reading

Results of the study indicate that children's ability to determine common meanings in context is different from their ability to determine obscure meanings in context. The results have implications for various aspects of the teaching of reading.

The Use of Readability Formulas

Howards (1964) has discussed the implications of "hard" meanings of "easy" words on the use of readability formulas. The writer concurs in his judgment that "hard", i.e., obscure, meanings of multiple-meaning words should be weighted in calculating the difficulty of text. On the basis of data from the Words in Context Test, unusual meanings of familiar nouns may deserve a higher weight than unfamiliar nouns.

A practical consideration is involved in the proposed weighting, namely, the decision as to whether a given meaning is obscure. Realistically, teachers can not be expected to consult so esoteric a source as the Lorge-Thorndike semantic count since its use requires prior use of the Oxford English Dictionary. Using a pragmatic approach, the teacher might assume that meanings seldom used by adults would probably be obscure to children. Inspection of the Semantic Survey results on obscure meanings given in Chapter II, Table 3, leads the writer to conclude that carefully considering the frequency of use of a specific

meaning in one's own speaking, listening, and reading vocabularies is a feasible beginning point in determining meanings which may be unusual, odd, or obscure to children.

If a teacher doubts children's ability to understand a given word in a particular context, an alternative to using personal judgment would be to determine whether a particular group of children know the appropriate obscure meaning of a familiar polysemantic word in a given context. Five or ten children could be asked to tell in their own words what the sentence means. Then, conclusions about the difficulty would be based on the response of the readers for whom the material was written.

Increased attention to unusual meanings of polysemantic words on the part of teachers seems to be a compromise position between abandoning the use of readability formulas and waiting for the collection of empirical data on which weighting could be based.

The Use of Context

Chall (1967) has stated, "Although theoretically the basal-reader word-perception program leans heavily on the use of context and picture clues (learning or remembering a word because it makes sense in relation to the surrounding words or pictures), the guidebooks suggest almost no such practice (p. 204-205)." While Chall's statement refers to the word-perception program, in particular, the statement does indicate that children may lack specific practice in exploiting interrelationships in sentences.

The use of context is sometimes recommended as a check on the prior application of phonic rules. After a word has been decoded, the child

is asked if it makes sense in the sentence. This afterthought approach to the use of context may result from the attacks by critics of the teaching of reading who labeled the use of context as "guessing" rather than perceiving it as making legitimate inferences.

With obscure meanings of multiple-meaning words, using the context to ascertain the appropriate meaning is not optional, but necessary. When children were given a miniature dictionary of four meanings from which to choose, they had difficulty determining obscure meanings. Thus, simply teaching additional meanings of polysemantic words in relative isolation will not insure that children can select the appropriate meaning for a given sentence.

Since many English words are polysemantic, teachers will need to exercise judgment about the meanings which require particular attention. As a starting point, meanings which occur in children's reading materials, but which are not commonly used by either adults or children should be given attention. Secondly, a diagnostic attitude by teachers toward children's mistakes on comprehension questions may uncover confusions about the situationally appropriate meanings of polysemantic words. In a study by Frayer (1970), the following answer was given on a completion test: the angles of a rectangle were described as "2 right angles and 2 left angles." Frayer observed that the interference might have been due to a different meaning previously associated with the concept label. The example illustrates a semantic analysis of an error.

Implications for Further Research

Since the study showed significant differences in children's ability to work with common and obscure meanings of polysemantic nouns in context, it should be replicated in the three remaining form classes, verbs, adjectives, and adverbs, to allow a generalized statement about the interaction of polysemantic words and semantic syntax.

After the proposed replications, children's ability to work with polysemantic words commonly functioning in more than one form class should be investigated. The proposed study, like Harris' study, would investigate grammatical syntax as well as the semantic syntax and lexical items. If the word round were used in the sentence "We sang a round during music class," the child given a noun meaning, a verb meaning, an adjective meaning, and an adverb meaning from which to choose would be constrained to choose the noun meaning on the basis of the preceding "a" as well as the basis of meaning.

Accumulation of this type of empirical data would allow a reconsideration of weighting procedures for readability formulas and an evaluation of teaching procedures used with multiple-meaning words in context. The interference effect noted in the present study may suggest that greater attention ought to be paid to unusual meanings of familiar words than to new words in context. If in new reading programs decoding skills are introduced and mastered earlier, more time will be available for teachers to work with this aspect of comprehension.

APPENDIX A

Name _____ Boy Girl

Directions:

Some words have more than one meaning. We usually use one of the meanings in our talking, reading, and writing. Listen while I read a sample.

SAMPLE: bay

_____ a) a long deep bark of a dog
_____ b) part of a sea or a lake
_____ c) a reddish, brown horse
_____ d) a tree

Mark the meaning you know best with a number 1 on the blank next to its letter. If you know another meaning quite well, mark it 2. If you know a third meaning, mark it 3. If there is a meaning you use less than the others, mark it 4. If you don't know a particular meaning, leave that space blank.

(Discuss)

On the following pages you will find 30 words. After each word is a list of four meanings. Read the word, read all four meanings. Mark the meaning you use most often with a number 1. If you know another meaning quite well, mark it 2. If you know a third meaning but don't use it as often as the others, mark it 3. If you see a fourth meaning that you know but use less than the others, mark it 4. If there are meanings you don't know, leave them blank.

Write your name on the top of each page and circle boy or girl.

Read each word and its definitions carefully before you mark any number for that word. If you have any questions during the time you are doing this, raise your hand and I will come to your desk.

Name _____ Boy Girl

1. air

_____ A) a look, manner

_____ B) a melody, tune, song

_____ C) a mixture of gases surrounding the earth

_____ D) sky

2. ball

_____ A) anything round

_____ B) a bullet

_____ C) a large party for dancing

_____ D) a round object thrown, kicked, or knocked in games

3. bank

_____ A) ground next to a river

_____ B) a long pile or heap

_____ C) a place for keeping money

_____ D) sloping of an airplane to one side

4. bed

_____ A) anything to sleep or rest on

_____ B) a flat base on which anything rests

_____ C) layer

_____ D) a piece of ground where plants are grown

5. bit

_____ A) part of a bridle that goes in a horse's mouth

_____ B) a short time

_____ C) a small amount

_____ D) a tool for drilling

6. blow

_____ A) an attack

_____ B) a hard hit

_____ C) a hard wind, a gale

_____ D) a sudden happening that causes loss or shock

7. board

_____ A) food served on a table

_____ B) a group of persons managing something

_____ C) a table to serve food on

_____ D) a thin piece of wood

8. body

_____ A) a group of persons

_____ B) the main part of anything

_____ C) substance

_____ D) the whole part of a man or animal

9. box

_____ A) a blow with an open hand

_____ B) a container made of wood

_____ C) a small shelter

_____ D) a small tree or shrub

10. call

_____ A) a command, an invitation

_____ B) a short visit

_____ C) a shout

_____ D) the special noise a bird or animal makes

Name _____ Boy Girl

11. charge

____ A) an attack
____ B) duty
____ C) person under someone's care
____ D) price

12. class

____ A) a group of pupils taught together
____ B) a group of things of the same kind
____ C) quality
____ D) a rank of society

13. company

____ A) a group of people
____ B) part of an army led by a captain
____ C) a ship's crew
____ D) visitors

14. cry

____ A) a fit of weeping
____ B) a loud call, shout
____ C) the noise of an animal
____ D) slogan, call to action

15. day

____ A) the hours for work
____ B) period, time
____ C) time of light between sunrise and sunset
____ D) twenty-four hours

16. face

____ A) front part of the head
____ B) look, expression
____ C) the right side, the surface
____ D) an ugly look, a peculiar look

17. feeling

____ A) emotion
____ B) opinion
____ C) sensation, condition of being aware
____ D) sense of touch

18. field

____ A) flat space, broad surface
____ B) land with few or no trees
____ C) piece of land used for crops or pasture
____ D) range, sphere of activity

19. floor

____ A) flat surface of anything
____ B) part of a room to walk on
____ C) the right to speak
____ D) story of a building

20. front

____ A) the first part
____ B) land facing a street or river
____ C) part that faces forward
____ D) place where fighting is going on

Name _____ Boy Girl

21. fruit

_____ A) part of a plant in which the seeds are

_____ B) product of a tree that is good to eat

_____ C) result of anything

_____ D) useful product of plant growth

22. game

_____ A) animals and birds that are hunted

_____ B) a contest with certain rules

_____ C) scheme, plan

_____ D) a score in a game

23. grade

_____ A) a class in school

_____ B) a degree of quality or value

_____ C) number or letter that shows how well one has done

_____ D) the slope of a road

24. ground

_____ A) any piece of land used for some purpose

_____ B) background

_____ C) a foundation for what is said

_____ D) soil

25. hand

_____ A) cards held by a player

_____ B) the end of the arm

_____ C) a hired worker

_____ D) measure used in giving the height of horses

26. head

_____ A) crisis

_____ B) lead, chief person

_____ C) mind, understanding

_____ D) top part of the body where eyes, ears and mouth are

27. home

_____ A) country where one was born

_____ B) the goal in many games

_____ C) place where a person or family lives

_____ D) place where a thing is especially common

28. house

_____ A) an assembly for making laws

_____ B) a building in which people live

_____ C) a business firm

_____ D) a family, especially a noble family

29. life

_____ A) account of a person's life

_____ B) living, being alive

_____ C) a person

_____ D) spirit, vigor, energy

30. light

_____ A) daytime

_____ B) knowledge, information

_____ C) model, example

_____ D) that by which we see

Name _____ Boy Girl

31. line

_____ A) a kind or brand of goods
_____ B) a long narrow mark
_____ C) a piece of rope, cord, or wire
_____ D) a row of persons or things

32. master

_____ A) an expert
_____ B) person who rules or commands people or things
_____ C) a picture by a great artist
_____ D) title of respect for a boy

33. part

_____ A) character in a play
_____ B) a dividing line left in combing one's hair
_____ C) a thing that helps to make up a whole
_____ D) a side in a dispute or contest

34. party

_____ A) a group of people having a good time together
_____ B) a group of people wanting the same kind of government
_____ C) one who takes part in, aids, or knows about
_____ D) a person

35. piece

_____ A) a bit or scrap
_____ B) a coin
_____ C) a single composition in art
_____ D) a single thing in a set

36. place

_____ A) a city, town, or village
_____ B) the part of space occupied by a person or thing
_____ C) a space or seat for a person
_____ D) work, job, employment

37. race

_____ A) any contest of speed
_____ B) a group of people of the same kind
_____ C) a group of persons having the same ancestors way back in the past
_____ D) a strong or rapid current of water

38. rest

_____ A) absence of motion, stillness
_____ B) in music, a pause
_____ C) sleep
_____ D) what is left

39. roll

_____ A) a deep loud sound
_____ B) a kind of bread or cake
_____ C) a list of names
_____ D) motion from side to side

40. room

_____ A) a part of a house with walls of its own
_____ B) the people in a room
_____ C) opportunity
_____ D) space

Name _____ Boy Girl

41. round

_____ A) a discharge of guns, bullets, powder

_____ B) a section of a game or sport

_____ C) a routine, a series of duties

_____ D) a short song sung by several persons beginning one after another

42. run

_____ A) a number of fish moving together

_____ B) a place where stitches become undone as in a stocking

_____ C) a sudden demand or call

_____ D) a trip

43. school

_____ A) a department in a university

_____ B) a group of people having the same beliefs

_____ C) a large number of the same kind of fish swimming together

_____ D) a place for teaching and learning

44. show

_____ A) an appearance

_____ B) a display

_____ C) a play, motion picture or T.V. program

_____ D) a theater

45. side

_____ A) either the right or left part of a thing

_____ B) part of a family, line of descent

_____ C) slope of a hill

_____ D) a surface that is not top, bottom, front, or back

46. spring

_____ A) an elastic devise that returns to its shape after being pulled or held out of shape

_____ B) a leap or jump

_____ C) a season after winter

_____ D) a small stream of water

47. stand

_____ A) a group of growing trees

_____ B) a place for a small business

_____ C) something to put things on or in

_____ D) a halt or stop

48. suit

_____ A) a case in a law court

_____ B) one of four sets of cards in a deck

_____ C) request, asking

_____ D) set of clothes

49. table

_____ A) food put on a table to be eaten

_____ B) a list

_____ C) a piece of furniture having a smooth top on legs

_____ D) a thin, flat piece of wood, stone or metal

50. tea

_____ A) an afternoon party at which tea is served

_____ B) a drink made by pouring water over leaves

_____ C) the leaves

_____ D) a light meal

Name _____ Boy Girl

51. thing

_____ A) any object or substance
_____ B) matter, affair
_____ C) person or animal
_____ D) whatever is spoken of

52. time

_____ A) all the days that ever have been or will be
_____ B) some exact point in time
_____ C) rate of movement in music
_____ D) a way of reckoning time

53. top

_____ A) highest point or part
_____ B) part of a plant growing above the ground
_____ C) platform around the upper part of a lower mast on a ship
_____ D) a toy that spins on a point

54. train

_____ A) connected line of railroad cars moving together
_____ B) a group of followers
_____ C) a line of people, animals, etc.
_____ D) part that hangs down and drags behind

55. truck

_____ A) dealings
_____ B) rubbish
_____ C) a strongly built automobile, cart or wagon for carrying heavy loads
_____ D) vegetables raised for market

56. turn

_____ A) change of direction
_____ B) deed, act
_____ C) motion like that of a wheel
_____ D) time or chance to do something

57. wash

_____ A) a disturbance in the air made by an airplane
_____ B) liquid for special use
_____ C) a quantity of clothes washed or to be washed
_____ D) a thin coating of color or metal

58. way

_____ A) direction
_____ B) distance
_____ C) manner, style
_____ D) method, means

59. will

_____ A) feeling toward another
_____ B) a legal statement about property when one dies
_____ C) purpose, determination
_____ D) wish, desire

60. yard

_____ A) a piece of ground fenced in for a business
_____ B) a piece of ground near a house or barn
_____ C) a place with tracks where railroad cars are stored
_____ D) three feet or thirty-six inches

APPENDIX B

DIRECTIONS:

Today you are going to work with words that have more than one meaning. Only one of those meanings will be correct in each sentence you will read. You will pick out that one meaning which makes sense in each sentence and mark it with an X. (Sample on the board.)

Read each sentence and look at the underlined word. Then read the four meanings under the sentence. Read the sentence again and decide which of the four meanings is the best one for the underlined word in that sentence. Make an X on the line in front of that meaning.

NAME _____

FORM I

1. My father, mother, brother, and I have a yellow <u>house</u>.

_____ A. an assembly for making laws
_____ B. a business firm
_____ C. a building in which people live
_____ D. a family, especially a noble family

2. The skillful craftsman put a silver <u>wash</u> over the copper bowl.

_____ A. a disturbance in the air made by an airplane
_____ B. liquid for special use
_____ C. a quantity of clothes washed or to be washed
_____ D. a thin coating of color or metal

3. JoAnn wasn't frightened by flashes of lightning or the <u>roll</u> of thunder.

_____ A. a deep loud sound
_____ B. a kind of bread or cake
_____ C. a list of names
_____ D. motion from side to side

4. A pony in the zoo may be 9 <u>hands</u> high.

_____ A. cards held by a player
_____ B. the end of the arm
_____ C. measure used in giving the height of horses
_____ D. a hired worker

5. We had taffy apples and told ghost stories at our Halloween <u>party</u>.

_____ A. a group of people wanting the same kind of government
_____ B. a group of people having a good time together
_____ C. one who takes part in, aids, or knows about
_____ D. a person

NAME _____

I

6. In the early days New England was the <u>home</u> of maple syrup.

_____ A. place where a thing is especially common
_____ B. place where a person or family lives
_____ C. the goal in many games
_____ D. country where one was born

7. The unloading of a circus train has an <u>air</u> of excitement.

_____ A. a mixture of gases surrounding the earth
_____ B. a look, manner
_____ C. a melody, tune, song
_____ D. sky

8. I sometimes play with a boy in Mrs. Jones' third grade <u>class</u>.

_____ A. quality
_____ B. a group of pupils taught together
_____ C. a group of things of the same kind
_____ D. a rank of society

9. The fastest boy in our grade won the first <u>race</u>.

_____ A. a strong or rapid current of water
_____ B. a group of people of the same kind
_____ C. a group of persons having the same ancestors way back in the past
_____ D. any contest of speed

10. To be punished is often the <u>fruit</u> of bad behavior.

_____ A. part of a plant in which the seeds are
_____ B. result of anything
_____ C. product of a tree that is good to eat
_____ D. useful product of plant growth

NAME _____

I

11. We played baseball with Tom's brand new ball until dark.

_____ A. anything round
_____ B. a bullet
_____ C. a large party for dancing
_____ D. a round object thrown, kicked, or knocked in games

12. To make a shelf, you need a wide board and nails.

_____ A. food served on a table
_____ B. a thin piece of wood
_____ C. a group of persons managing something
_____ D. a table to serve food on

13. Small farms in China, Japan, and India are known for growing tea.

_____ A. an afternoon party at which tea is served
_____ B. a light meal
_____ C. a drink made by pouring water over leaves
_____ D. the leaves

14. Sue does not live on this side of the street.

_____ A. part of a family, line of descent
_____ B. a surface that is not top, bottom, front, or back
_____ C. either the right or left part of a thing
_____ D. slope of a hill

15. John decided to plant either a rose bush or a box.

_____ A. a blow with an open hand
_____ B. a container made of wood
_____ C. a small tree or shrub
_____ D. a small shelter

NAME: _____

I

16. The busy little child turned his <u>face</u> away from me.

_____ A. look, expression
_____ B. front part of the head
_____ C. the right side, the surface
_____ D. an ugly look, a peculiar look

17. The workman carried his hammer, his <u>bit</u>, and his saw.

_____ A. part of a bridle that goes in a horse's mouth
_____ B. a short time
_____ C. a tool for drilling
_____ D. a small amount

18. The lost little boy didn't know which <u>way</u> to turn.

_____ A. direction
_____ B. distance
_____ C. manner, style
_____ D. method, means

19. The shoe store carries a high-priced and a middle-priced <u>line</u> of shoes.

_____ A. a long narrow mark
_____ B. a piece of rope, cord, or wire
_____ C. a kind or brand of goods
_____ D. a row of persons or things

20. Mary bought a new red and black rug for the living <u>room</u>.

_____ A. a part of a house with walls of its own
_____ B. the people in a room
_____ C. opportunity
_____ D. space

NAME _____

I

21. Stan heard the whistle of a train coming to a crossing.

_____ A. a group of followers
_____ B. part that hangs down and drags behind
_____ C. a line of people, animals, etc.
_____ D. connected line of railroad cars moving together

22. I will write your telephone number on a piece of paper.

_____ A. a bit or scrap
_____ B. a coin
_____ C. a single composition in art
_____ D. a single thing in a set

23. A helpful person likes to do a good turn for someone else.

_____ A. deed, act
_____ B. change of direction
_____ C. motion like that of a wheel
_____ D. time or chance to do something

24. The policeman watched the jewel thief carefully to figure out his game.

_____ A. animals and birds that are hunted
_____ B. a contest with certain rules
_____ C. a score in a game
_____ D. scheme, plan

25. Peggy has yellow sheets and a white blanket on her bed.

_____ A. anything to sleep or rest on
_____ B. a flat base on which anything rests
_____ C. layer
_____ D. a piece of ground where plants are grown

NAME _____

I

26. Problems between North and South came to a <u>head</u> during the Civil War.

_____ A. top part of the body where eyes, ears and mouth are
_____ B. mind, understanding
_____ C. lead, chief person
_____ D. crisis

27. Betty had red eyes and a wet face after her <u>cry</u>.

_____ A. the noise of an animal
_____ B. slogan, call to action
_____ C. a loud call, shout
_____ D. a fit of weeping

28. In the fall, John and I will be in fifth <u>grade</u>.

_____ A. the slope of a road
_____ B. a degree of quality or value
_____ C. a class in school
_____ D. number or letter that shows how well one has done

29. A jet may get ready to land by going into a <u>bank</u>.

_____ A. ground next to a river
_____ B. sloping of an airplane to one side
_____ C. a place for keeping money
_____ D. a long pile or heap

30. To have ships to sail, Columbus made <u>suit</u> to Queen Isabella.

_____ A. a case in a law court
_____ B. request, asking
_____ C. set of clothes
_____ D. one of four sets of cards in a deck

NAME _____

I

31. The enemy used bombs and gunfire all day to strike their <u>blow</u>.

_____ A. a hard wind, a gale
_____ B. a sudden happening that causes loss or shock
_____ C. an attack
_____ D. a hard hit

32. The club president called on Carol and gave her the <u>floor</u>.

_____ A. the right to speak
_____ B. part of a room to walk on
_____ C. story of a building
_____ D. flat surface of anything

33. The baby monkey has a little round <u>body</u> with lots of fur.

_____ A. the main part of anything
_____ B. substance
_____ C. the whole part of a man or animal
_____ D. a group of persons

34. In old Egypt, an Egyptian could be the <u>master</u> of slaves.

_____ A. an expert
_____ B. person who rules or commands people or things
_____ C. a picture by a great artist
_____ D. title of respect for a boy

NAME _____

FORM II

1. My father, mother, brother, and I have a yellow nuj.

_____ A. an assembly for making laws
_____ B. a business firm
_____ C. a building in which people live
_____ D. a family, especially a noble family

2. The skillful craftsman put a silver mef over the copper bowl.

_____ A. a disturbance in the air made by an airplane
_____ B. liquid for special use
_____ C. a quantity of clothes washed or to be washed
_____ D. a thin coating of color or metel

3. JoAnn wasn't frightened by flashes of lightning or the dax of thunder.

_____ A. a deep loud sound
_____ B. a kind of bread or cake
_____ C. a list of names
_____ D. motion from side to side

4. A pony in the zoo may be 9 xyk high.

_____ A. cards held by a player
_____ B. the end of the arm
_____ C. measure used in giving the height of horses
_____ D. a hired worker

5. We had taffy apples and told ghost stories at our Halloween yud.

_____ A. a group of people wanting the same kind of government
_____ B. a group of people having a good time together
_____ C. one who takes part in, aids, or knows about
_____ D. a person

NAME _____

II

6. In the early days New England was the vyq of maple syrup.

_____ A. place where a thing is especially common
_____ B. place where a person or family lives
_____ C. the goal in many games
_____ D. country where one was born

7. The unloading of a circus train has an xej of excitement.

_____ A. a mixture of gases surrounding the earth
_____ B. a look, manner
_____ C. a melody, tune, song
_____ D. sky

8. I sometimes play with a boy in Mrs. Jones' third grade kyv.

_____ A. quality
_____ B. a group of pupils taught together
_____ C. a group of things of the same kind
_____ D. a rank of society

9. The fastest boy in our grade won the first qob.

_____ A. a strong or rapid current of water
_____ B. a group of people of the same kind
_____ C. a group of persons having the same ancestors way back in the past
_____ D. any contest of speed

10. To be punished is often the zeq of bad behavior.

_____ A. part of a plant in which the seeds are
_____ B. result of anything
_____ C. product of a tree that is good to eat
_____ D. useful product of plant growth

NAME _____

II

11. We played baseball with Tom's brand new jyv until dark.

_____ A. anything round
_____ B. a bullet
_____ C. a large party for dancing
_____ D. a round object thrown, kicked, or knocked in games

12. To make a shelf, you need a wide xat and nails.

_____ A. food served on a table
_____ B. a thin piece of wood
_____ C. a group of persons managing something
_____ D. a table to serve food on

13. Small farms in China, Japan, and India are known for growing gyq.

_____ A. an afternoon party at which tea is served
_____ B. a light meal
_____ C. a drink made by pouring water over leaves
_____ D. the leaves

14. Sue does not live on this yuk of the street.

_____ A. part of a family, line of descent
_____ B. a surface that is not top, bottom, front, or back
_____ C. either the right or left part of a thing
_____ D. slope of a hill

15. John decided to plant either a rose bush or a cij.

_____ A. a blow with an open hand
_____ B. a container made of wood
_____ C. a small tree or shrub
_____ D. a small shelter

NAME _____

II

16. The busy little child turned his yof away from me.

_____ A. look, expression
_____ B. front part of the head
_____ C. the right side, the surface
_____ D. an ugly look, a peculiar look

17. The workman carried his hammer, his qih, and his saw.

_____ A. part of a bridle that goes in a horse's mouth
_____ B. a short time
_____ C. a tool for drilling
_____ D. a small amount

18. The lost little boy didn't know which xuy to turn.

_____ A. direction
_____ B. distance
_____ C. manner, style
_____ D. method, means

19. The shoe store carries a high-priced and a middle-priced gex of shoes.

_____ A. a long narrow mark
_____ B. a piece of rope, cord, or wire
_____ C. a kind or brand of goods
_____ D. a row of persons or things

20. Mary bought a new red and black rug for the living zyw.

_____ A. a part of a house with walls of its own
_____ B. the people in a room
_____ C. opportunity
_____ D. space

NAME _____

II

21. Stan heard the whistle of a vug coming to a crossing.

_____ A. a group of followers
_____ B. part that hangs down and drags behind
_____ C. a line of people, animals, etc.
_____ D. connected line of railroad cars moving together

22. I will write your telephone number on a xeh of paper.

_____ A. a bit or scrap
_____ B. a coin
_____ C. a single composition in art
_____ D. a single thing in a set

23. A helpful person likes to do a good jyz for someone else.

_____ A. deed, act
_____ B. change of direction
_____ C. motion like that of a wheel
_____ D. time or chance to do something

24. The policeman watched the jewel thief carefully to figure out his qov.

_____ A. animals and birds that are hunted
_____ B. a contest with certain rules
_____ C. a score in a game
_____ D. scheme, plan

25. Peggy has yellow sheets and a white blanket on her gyf.

_____ A. anything to sleep or rest on
_____ B. a flat base on which anything rests
_____ C. layer
_____ D. a piece of ground where plants are grown

NAME _____

II

26. Problems between North and South came to a xuw during the Civil War.

_____ A. top part of the body where eyes, ears and mouth are
_____ B. mind, understanding
_____ C. lead, chief person
_____ D. crisis

27. Betty had red eyes and a wet face after her myv.

_____ A. the noise of an animal
_____ B. slogan, call to action
_____ C. a loud call, shout
_____ D. a fit of weeping

28. In the fall, John and I will be in fifth zoj.

_____ A. the slope of a road
_____ B. a degree of quality or value
_____ C. a class in school
_____ D. number or letter that shows how well one has done

29. A jet may get ready to land by going into a yuf.

_____ A. ground next to a river
_____ B. sloping of an airplane to one side
_____ C. a place for keeping money
_____ D. a long pile or heap

30. To have ships to sail, Columbus made jyc to Queen Isabella.

_____ A. a case in a law court
_____ B. request, asking
_____ C. set of clothes
_____ D. one of four sets of cards in a deck

NAME _____

II

31. The enemy used bombs and gunfire all day to strike their qif.

_____ A. a hard wind, a gale
_____ B. a sudden happening that causes loss or shock
_____ C. an attack
_____ D. a hard hit

32. The club president called on Carol and gave her the yuv.

_____ A. the right to speak
_____ B. part of a room to walk on
_____ C. story of a building
_____ D. flat surface of anything

33. The baby monkey has a little round ziq with lots of fur.

_____ A. the main part of anything
_____ B. substance
_____ C. the whole part of a man or animal
_____ D. a group of persons

34. In old Egypt, an Egyptian could be the goc of slaves.

_____ A. an expert
_____ B. person who rules or commands people or things
_____ C. a picture by a great artist
_____ D. title of respect for a boy

APPENDIX C

DIRECTIONS:

Today you are going to work with words that have more than one meaning. Only one of those meanings will be correct in each sentence you will read. You will pick out that one meaning which makes sense in each sentence and mark it with an X. (Sample on the board.)

Read each sentence and look at the underlined word. Then read the four meanings under the sentence. Read the sentence again and decide which of the four meanings is the best one for the underlined word in that sentence. Make an X on the line in front of that meaning.

NAME _____ _____

C - FORM I

1. My father, mother, brother, and I have a yellow house.

_____A. an assembly for making laws
_____B. a business firm
_____C. a building in which people live
_____D. a family, especially a noble family

2. The art teacher puts a gold wash on the children's statues

_____A a disturbance in the air made by an airplane
_____B. liquid for special use
_____C a quantity of clothes washed or to be washed
_____D. a thin coating of color or metal

3. JoAnn wasn't frightened by flashes of lightning or the roll of thunder.

_____A. a deep loud sound
_____B a kind of bread or cake
_____C. a list of names
_____D. motion from side to side

4. A pony in the zoo may be 9 hands high.

_____A. cards held by a player
_____B. the end of the arm
_____C measure used in giving the height of horses
_____D. a hired worker

5. We had taffy apples and told ghost stories at our Halloween party.

_____A. a group of people wanting the same kind of government
_____B. a group of people having a good time together
_____C one who takes part in, aids, or knows about
_____D a person

C - FORM I

6. In the early days New England was the <u>home</u> of maple syrup.

_____A. place where a thing is especially common
_____B. place where a person or family lives
_____C the goal in many games
_____D. country where one was born

7. An empty old house may have an <u>air</u> of mystery.

_____A. a mixture of gases surrounding the earth
_____B. a look, manner
_____C. a melody, tune, song
_____D. sky

8. I sometimes play with a boy in Mrs. Jones' third grade <u>class</u>.

_____A. quality
_____B. a group of pupils taught together
_____C. a group of things of the same kind
_____D. a rank of society

9. Mike will get a prize for winning the <u>race</u>.

_____A. a strong or rapid current of water
_____B. a group of people of the same kind
_____C. a group of persons having the same ancestors way back in the past
_____D. any contest of speed

10. To be punished is often the <u>fruit</u> of bad behavior.

_____A. part of a plant in which the seeds are
_____B. result of anything
_____C. product of a tree that is good to eat
_____D. useful product of plant growth

C - FORM I

11. We played baseball with Tom's brand new ball until dark.

_____A. anything round

_____B. a bullet

_____C. a large party for dancing

_____D. a round object thrown, kicked, or knocked in games

12. To make a shelf, you need a wide board and nails.

_____A. food served on a table

_____B. a thin piece of wood

_____C. a group of persons managing something

_____D. a table to serve food on

13. Small farms in China, Japan, and India are known for growing tea.

_____A. an afternoon party at which tea is served

_____B. a light meal

_____C. a drink made by pouring water over leaves

_____D. the leaves

14. Sue does not live on this side of the street.

_____A. part of a family, line of descent

_____B. a surface that is not top, bottom, front, or back

_____C. either the right or left part of a thing

_____D. slope of a hill

15. John decided to plant either a rose bush or a box.

_____A. a blow with an open hand

_____B. a container made of wood

_____C. a small tree or shrub

_____D. a small shelter

C - FORM I

16. A lady puts powder on her <u>face</u> to keep it looking pretty.

_____A. look, expression
_____B. front part of the head
_____C. the right side, the surface
_____D. an ugly look, a peculiar look

17. John looked in his basement for his nails, his <u>bit</u>, and his hammer.

_____A. part of a bridle that goes in a horse's mouth
_____B. a short time
_____C. a tool for drilling
_____D. a small amount

18. The little old man pointed out the <u>way</u> to go.

_____A. direction
_____B. distance
_____C. manner, style
_____D. method, means

19. The shoe store carries a high-priced and a middle-priced <u>line</u> of shoes.

_____A. a long narrow mark
_____B. a piece of rope, cord, or wire
_____C. a kind or brand of goods
_____D. a row of persons or things

20. We eat our dinner in the kitchen or the dining <u>room</u>.

_____A. a part of a house with walls of its own
_____B. the people in a room
_____C. opportunity
_____D. space

C - FORM I

21. Stan heard the whistle of a <u>train</u> coming to a crossing.

_____A. a group of followers
_____B. part that hangs down and drags behind
_____C. a line of people, animals, etc.
_____D. connected line of railroad cars moving together

22. I will write your telephone number on a <u>piece</u> of paper.

_____A. a bit or scrap
_____B. a coin
_____C. a single composition in art
_____D. a single thing in a set

23. Carrying a heavy package for an old lady is a good <u>turn</u>.

_____A. deed, act
_____B. change of direction
_____C. motion like that of a wheel
_____D. time or chance to do something

24. The policeman watched the jewel thief carefully to figure out his <u>game</u>.

_____A. animals and birds that are hunted
_____B. a contest with certain rules
_____C. a score in a game
_____D. scheme, plan

25. Peggy has yellow sheets and a white blanket on her <u>bed</u>.

_____A. anything to sleep or rest on
_____B. a flat base on which anything rests
_____C. layer
_____D. a piece of ground where plants are grown

C - FORM I

26. The difficulties at work came to a <u>head</u> causing the man to quit.

_____A. top part of the body where eyes, ears and mouth are
_____B. mind, understanding
_____C. lead, chief person
_____D. crisis

27. Betty had red eyes and a wet face after her <u>cry</u>.

_____A. the noise of an animal
_____B. slogan, call to action
_____C. a loud call, shout
_____D. a fit of weeping

28. We learned all about our town in third <u>grade</u>.

_____A. the slope of a road
_____B. a degree of quality or value
_____C. a class in school
_____D. number or letter that shows how well one has done

29. A jet may get ready to land by going into a <u>bank</u>.

_____A. ground next to a river
_____B. sloping of an airplane to one side
_____C. a place for keeping money
_____D. a long pile or heap

30. To get land in America, Lord Baltimore made <u>suit</u> to King Charles.

_____A. a case in a law court
_____B. request, asking
_____C. set of clothes
_____D. one of four sets of cards in a deck

C - FORM I

31. The enemy used bombs and gunfire all day to strike their <u>blow</u>.

_____A. a hard wind, a gale
_____B. a sudden happening that causes loss or shock
_____C. an attack
_____D. a hard hit

32. The club president called on Carol and gave her the <u>floor</u>.

_____A. the right to speak
_____B. part of a room to walk on
_____C. story of a building
_____D. flat surface of anything

33. The baby monkey has a little round <u>body</u> with lots of fur.

_____A. the main part of anything
_____B. substance
_____C. the whole part of a man or animal
_____D. a group of persons

34. In old Egypt, an Egyptian could be the <u>master</u> of slaves.

_____A. an expert
_____B. person who rules or commands people or things
_____C. a picture by a great artist
_____D. title of respect for a boy

NAME _____

C - FORM II

1. My father, mother, brother, and I have a yellow gui.

_____A. an assembly for making laws
_____B. a business firm
_____C. a building in which people live
_____D. a family, especially a noble family

2. The art teacher puts a gold mef on the children's statues.

_____A. a disturbance in the air made by an airplane
_____B. liquid for special use
_____C. a quantity of clothes washed or to be washed
_____D. a thin coating of color or metal

3. JoAnn wasn't frightened by flashes of lightning or the dax of thunder.

_____A. a deep loud sound
_____B. a kind of bread or cake
_____C. a list of names
_____D. motion from side to side

4. A pony in the zoo may be 9 xyk high.

_____A. cards held by a player
_____B. the end of the arm
_____C. measure used in giving the height of horses
_____D. a hired worker

5. We had taffy apples and told ghost stories at our Halloween yud.

_____A. a group of people wanting the same kind of government
_____B. a group of people having a good time together
_____C. one who takes part in, aids, or knows about
_____D. a person

C - FORM II

6. In the early days New England was the vyq of maple syrup.

_____A. place where a thing is especially common
_____B. place where a person or family lives
_____C. the goal in many games
_____D. country where one was born

7. An empty old house may have a xej of mystery.

_____A. a mixture of gases surrounding the earth
_____B. a look, manner
_____C. a melody, tune, song
_____D. sky

8. I sometimes play with a boy in Mrs. Jones' third grade kyv.

_____A. quality
_____B. a group of pupils taught together
_____C. a group of things of the same kind
_____D. a rank of society

9. Mike will get a prize for winning the gob.

_____A. a strong or rapid current of water
_____B. a group of people of the same kind
_____C. a group of persons having the same ancestors way back in the past
_____D. any contest of speed

10. To be punished is often the zeq of bad behavior.

_____A. part of a plant in which the seeds are
_____B. result of anything
_____C. product of a tree that is good to eat
_____D. useful product of plant growth

C - FORM II

11. We played baseball with Tom's brand new jyv until dark

_____A. anything round
_____B. a bullet
_____C. a large party for dancing
_____D. a round object thrown, kicked, or knocked in games

12. To make a shelf, you need a wide xat and nails.

_____A. food served on a table
_____B. a thin piece of wood
_____C. a group of persons managing something
_____D. a table to serve food on

13. Small farms in China, Japan, and India are known for growing gyq.

_____A. an afternoon party at which tea is served
_____B. a light meal
_____C. a drink made by pouring water over leaves
_____D. the leaves

14. Sue does not live on this vuk of the street.

_____A. part of a family, line of descent
_____B. a surface that is not top, bottom, front, or back
_____C. either the right or left part of a thing
_____D. slope of a hill

15. John decided to plant either a rose bush or a cij.

_____A. a blow with an open hand
_____B. a container made of wood
_____C. a small tree or shrub
_____D. a small shelter

C - FORM II

16. A lady puts powder on her yof to keep it looking pretty.

_____A. look, expression
_____B. front part of the head
_____C. the right side, the surface
_____D. an ugly look, a peculiar look

17. John looked in his basement for his nails, his qih, and his hammer.

_____A. part of a bridle that goes in a horse's mouth
_____B. a short time
_____C. a tool for drilling
_____D. a small amount

18. The little old man pointed out the xuy to go.

_____A. direction
_____B. distance
_____C. manner, style
_____D. method, means

19. The shoe store carries a high-priced and middle-priced gex of shoes.

_____A. a long narrow mark
_____B. a piece of rope, cord, or wire
_____C. a kind or brand of goods
_____D. a row of persons or things

20. We eat our dinner in the kitchen or the dining zyw.

_____A. a part of a house with walls of its own
_____B. the people in a room
_____C. opportunity
_____D. space

C - FORM II

21. Stan heard the whistle of a vuq coming to a crossing.

_____A. a group of followers
_____B. part that hangs down and drags behind
_____C. a line of people, animals, etc.
_____D. connected line of railroad cars moving together

22. I will write your telephone number on a xeh of paper.

_____A. a bit or scrap
_____B. a coin
_____C. a single composition in art
_____D. a single thing in a set

23. Carrying a heavy package for an old lady is a good iyz.

_____A. deed, act
_____B. change of direction
_____C. motion like that of a wheel
_____D. time or chance to do something

24. The policeman watched the jewel thief carefully to figure out his qov.

_____A. animals and birds that are hunted.
_____B. a contest with certain roles
_____C. a score in a game
_____D. scheme, plan

25. Peggy has yellow sheets and a white blanket on her gyf.

_____A. anything to sleep or rest on
_____B. a flat base on which anything rests
_____C. layer
_____D. a piece of ground where plants are grown

C - FORM II

26. The difficulties at work came to a xuw causing the man to quit.

_____A. top part of the body where eyes, ears and mouth are
_____B. mind, understanding
_____C. lead, chief person
_____D. crisis

27. Betty had red eyes and a wet face after her myv.

_____A. the noise of an animal
_____B. slogan, call to action
_____C. a loud call, shout
_____D. a fit of weeping

28. We learned all about our town in third zoj.

_____A. the slope of a road
_____B. a degree of quality or value
_____C. a class in school
_____D. number of letter that shows how well one has done

29. A jet may get ready to land by going into a yuf.

_____A. ground next to a river
_____B. sloping of an airplane to one side
_____C. a place for keeping money
_____D. a long pile or heap

30. To get land in America, Lord Baltimore made iyc to King Charles.

_____A. a case in a law court
_____B. request, asking
_____C. set of clothes
_____D. one of four sets of cards in a deck

C - FORM II

31. The enemy used bombs and gunfire all day to strike their qif.

_____A. a hard wind, a gale
_____B. a sudden happening that causes loss or shock
_____C. an attack
_____D. a hard hit

32. The club president called on Carol and gave her the yuv.

_____A. the right to speak
_____B. part of a room to walk on
_____C. story of a building
_____D. flat surface of anything

33. The baby monkey has a little round zig with lots of fur.

_____A. the main part of anything
_____B. substance
_____C. the whole part of a man or animal
_____D. a group of persons

34. In old Egypt, an Egyptian could be the goc of a slave.

_____A. an expert
_____B. person who rules or commands people or things
_____C. a picture by a great artist
_____D. title of respect for a boy

NAME _____

D - FORM I

1. It is fun to visit my grandfather at his <u>house</u> on the farm.

_____A. an assembly for making laws
_____B. a business firm
_____C. a building in which people live
_____D. a family, especially a noble family

2. The skillful craftsman put a silver <u>wash</u> over the copper bowl.

_____A. a disturbance in the air made by an airplane
_____B. liquid for special use
_____C. a quantity of clothes washed or to be washed
_____D. a thin coating of color or metal

3. We heard the band coming by the <u>roll</u> of their drums.

_____A. a deep loud sound
_____B. a kind of bread or cake
_____C. a list of names
_____D. motion from side to side

4. Mary has a young brown colt about 9 <u>hands</u> high.

_____A. cards held by a player
_____B. the end of the arm
_____C. measure used in giving the height of horses
_____D. a hired worker

5. We had cake and ice cream at Tom's birthday <u>party</u>.

_____A. a group of people wanting the same kind of government
_____B. a group of people having a good time together
_____C one who takes part in, aids, or knows about
_____D. a person

D - FORM I

6. Florida has always been known as the <u>home</u> of oranges.

_____A. place where a thing is especially common
_____B. place where a person or family lives
_____C. the goal in many games
_____D. country where one was born

7. The unloading of a circus train has an <u>air</u> of excitement.

_____A. a mixture of gases surrounding the earth
_____B. a look, manner
_____C. a melody, tune, song
_____D. sky

8. We are going to study about France in our social studies <u>class</u>.

_____A. quality
_____B. a group of pupils taught together
_____C. a group of things of the same kind
_____D. a rank of society

9. The fastest boy in our grade won the first <u>race</u>.

_____A. a strong or rapid current of water
_____B. a group of people of the same kind
_____C. a group of persons having the same ancestors way back in the past
_____D. any contest of speed

10. To get the highest score is the <u>fruit</u> of hard work.

_____A. part of a plant in which the seeds are
_____B. result of anything
_____C. product of a tree that is good to eat
_____D. useful product of plant growth

D - FORM I

11. Johnny went out to play with his bat and <u>ball</u>.

_____A. anything round
_____B. a bullet
_____C. a large party for dancing
_____D. a round object thrown, kicked, or knocked in games

12. To get across the little creek, you walk on a <u>board</u>.

_____A. food served on a table
_____B. a thin piece of wood
_____C. a group of persons managing something
_____D. a table to serve food on

13. Mr. Jones' job is to put the <u>tea</u> on racks to dry.

_____A. an afternoon party at which tea is served
_____B. a light meal
_____C. a drink made by pouring water over leaves
_____D. the leaves

14. After 4:00 people can't park cars on this <u>side</u> of the street.

_____A. part of a family, line of descent
_____B. a surface that is not top, bottom, front, or back
_____C. either the right or left part of a thing
_____D. slope of a hill

15. In our front yard, we will plant a rose bush or a <u>box</u>.

_____A. a blow with an open hand
_____B. a container made of wood
_____C. a small tree or shrub
_____D. a small shelter

D - FORM I

16. The busy little child turned his <u>face</u> away from me.

_____A. look, expression
_____B. front part of the head
_____C. the right side, the surface
_____D. an ugly look, a peculiar look

17. The workman carried his hammer, his <u>bit</u>, and his saw.

_____A. part of a bridle that goes in a horse's mouth
_____B. a short time
_____C. a tool for dilling
_____D. a small amount

18. The lost little boy didn't know which <u>way</u> to turn.

_____A. direction
_____B. distance
_____C. manner, style
_____D. method, means

19. For five years, the store sold the same <u>line</u> of dresses.

_____A. a long narrow mark
_____B. a piece of rope, cord, or wire
_____C. a kind of brand of goods
_____D. a row of persons or things

20. Mary bought a new red and black rug for the living <u>room</u>.

_____A. a part of a house with walls of its own
_____B. the people in a room
_____C. opportunity
_____D. space

D - FORM I

21. You can go to Milwaukee by car, by train, or by plane.

_____A. a group of followers
_____B. part that hangs down and drags behind
_____C. a line of people, animals, etc.
_____D. connected line of railroad cars moving together

22. He looked in his desk for a <u>piece</u> of paper.

_____A. a bit or scrap
_____B. a coin
_____C. a single composition in art
_____D. a single thing in a set

23. A helpful person likes to do a good <u>turn</u> for someone else.

_____A. deed, act
_____B. change of direction
_____C. motion like that of a wheel
_____D. time or chance to do something

24. Tricking an enemy country is the <u>game</u> of a spy.

_____A. animals and birds that are hunted
_____B. a contest with certain rules
_____C. a score in a game
_____D. scheme, plan

25. Before school in the morning, John has to make his <u>bed</u>.

_____A. anything to sleep or rest on
_____B. a flat base on which anything rests
_____C. layer
_____D. a piece of ground where plants are grown

D - FORM I

26. Problems between North and South came to a <u>head</u> during the Civil War.

_____A. top part of the body where eyes, ears and mouth are
_____B. mind, understanding
_____C. lead, chief person
_____D. crisis

27. Sally sat in the corner and had her <u>cry</u>.

_____A. the noise of an animal
_____B. slogan, call to action
_____C. a loud call, shout
_____D. a fit of weeping

28. In the fall, John and I will be in fifth <u>grade</u>.

_____A. the slope of a road
_____B. a degree of quality or value
_____C. a class in school
_____D. number of letter that shows how well one has done

29. The pilot fastened his seat belt before going into the <u>bank</u>.

_____A. ground next to a river
_____B. sloping of an airplane to one side
_____C. a place for keeping money
_____D. a long pile or heap

30. To have ships to sail, Columbus made <u>suit</u> to Queen Isabella.

_____A. a case in a law court
_____B. request, asking
_____C. set of clothes
_____D. one of four sets of cards in a deck

D - FORM I

31. Taking garbage to the city dump strikes a **blow** against litter.

_____A. a hard wind, a gale
_____B. a sudden happening that causes loss or shock
_____C. an attack
_____D. a hard hit

32. To talk at a meeting, you must be given the floor.

_____A. the right to speak
_____B. part of a room to walk on
_____C. story of a building
_____D. flat surface of anything

33. Chickenpox makes the temperature of your **body** very high.

_____A. the main part of anything
_____B. substance
_____C. the whole part of a man or animal
_____D. a group of persons

34. In the early days of Rome, a master would have many slaves.

_____A. an expert
_____B. person who rules or commands people or things
_____C. a picture by a great artist
_____D. title of respect for a boy

NAME _____

D - FORM II

1. It is fun to visit my grandfather at his guj on the farm.

_____A. an assembly for making laws
_____B. a business firm
_____C. a building in which people live
_____D. a family, especially a noble family

2. The skillful craftsman put a silver mef over the copper bowl.

_____A. a disturbance in the air made by an airplane
_____B. liquid for special use
_____C. a quantity of clothes washed or to be washed
_____D. a thin coating of color or metal

3. We heard the band coming by the dax of their drums.

_____A. a deep loud sound
_____B. a kind of bread or cake
_____C. a list of names
_____D. motion from side to side

4. Mary has a young brown colt about 9 xyk high.

_____A. cards held by a player
_____B. the end of the arm
_____C. measure used in giving the height of horses
_____D. a hired worker

5. We had cake and ice cream at Tom's birthday yud.

_____A. a group of people wanting the same kind of government
_____B. a group of people having a good time together
_____C. one who takes part in, aids, or knows about
_____D. a person

D - FORM II

6. Florida has always been known as the vyq of oranges.

_____A. place where a thing is especially common
_____B. place where a person or family lives
_____C. the goal in many games
_____D. country where one was born

7. The unloading of a circus train has an xej of excitement.

_____A. a mixture of gases surrounding the earth
_____B. a look, manner
_____C. a melody, tune, song
_____D. sky

8. We are going to study about France in our social studies kyv.

_____A. quality
_____B. a group of pupils taught together
_____C. a group of things of the same kind
_____D. a rank of society

9. The fastest boy in our grade won the first qob.

_____A. a strong or rapid current of water
_____B. a group of people of the same kind
_____C. a group of persons having the same ancestors way back in the past
_____D. any contest of speed

10. To get the highest score is the zeq of hard work.

_____A. part of a plant in which the seeds are
_____B. result of anything
_____C. product of a tree that is good to eat
_____D. useful product of plant growth

D - FORM II

11. Johnny went out to play with his bat and iyv.

_____A. anything round
_____B. a bullet
_____C. a large party for dancing
_____D. a round object thrown, kicked, or knocked in games

12. To get across the little creek, you walk on a xat.

_____A. food served on a table
_____B. a thin piece of wood
_____C. a group of persons managing something
_____D. a table to serve food on

13. Mr. Jones' job is to put the gyq on racks to dry.

_____A. an afternoon party at which tea is served
_____B. a light meal
_____C. a drink made by pouring water over leaves
_____D. the leaves

14. After 4:00 people can't park cars on this vuk of the street

_____A. part of a family, line of descent
_____B. a that is not top, bottom, front, or back
_____C. either the right or left part of a thing
_____D. slope of a hill

15. In our front yard, we will plant a rose bush or a cij.

_____A. a blow with an open hand
_____B. a container made of wood
_____C. a small tree or shrub
_____D. a small shelter

D - FORM II

16. The busy little child turned his yof away from me.

_____A. look, expression
_____B. front part of the head
_____C. the right side, the surface
_____D. an ugly look, a peculiar look

17. The workman carried his hammer his qih, and his saw.

_____A. part of a bridle that goes in a horse's mouth
_____B. a short time
_____C. a tool for drilling
_____D. a small amount

18. The lost little boy didn't know which xuy to turn.

_____A. direction
_____B. distance
_____C. manner, style
_____D. method, means

19. For five years, the store sold the same gex of dresses.

_____A. a long narrow mark
_____B. a piece of rope, cord, or wire
_____C. a kind or brand of goods
_____D. a row of persons or things

20. Mary bought a new red and black rug for the living zyw.

_____A. a part of a house with walls of its own
_____B. the people in a room
_____C. opportunity
_____D. space

D - FORM II

21. You can go to Milwaukee by car, by vuq, or by plane.

_____A. a group of followers
_____B. part that hangs down and drags behind
_____C. a line of people, animals, etc.
_____D. connected line of railroad cars moving together

22. He looked in his desk for a xeh of paper.

_____A. a bit or scrap
_____B. a coin
_____C. a single composition in art
_____D. a single thing in a set

23. A helpful person likes to do a good iyz for someone else.

_____A. deed, act
_____B. change of direction
_____C. motion like that of a wheel
_____D. time or chance to do something

24. Tricking an enemy country is the qov of a spy.

_____A. animals and birds that are hunted
_____B. a contest with certain rules
_____C. a score in a game
_____D. scheme, plan

25. Before school in the morning, John has to make his gyf.

_____A. anything to sleep or rest on
_____B. a flat base on which anything rests
_____C. layer
_____D. a piece of ground where plants are grown

D - FORM II

26. Problems between North and South came to a xuw during the Civil War.

_____A. top part of the body where eyes, ears and mouth are
_____B. mind, understanding
_____C. lead, chief person
_____D. crisis

27. Sally sat in the corner and had her myv.

_____A. the noise of an animal
_____B. slogan, call to action
_____C. a loud call, shout
_____D. a fit of weeping

28. In the fall, John and I will be in fifth zoi.

_____A. the slope of a road
_____B. a degree of quality or value
_____C. a class in school
_____D. number of letter that shows how well one has done

29. The pilot fastened his seat belt before going into the yuf.

_____A. ground next to a river
_____B. sloping of an airplane to one side
_____C. a place for keeping money
_____D. a long pile or heap

30. To have ships to sail, Columbus made iyc to Queen Isabella.

_____A. a case in a law court
_____B. request, asking
_____C. set of clothes
_____D. one of four sets of cards in a deck

D - FORM II

31. Taking garbage to the city dump strikes a gif against litter.

_____A. a hard wind, a gale
_____B. a sudden happening that causes loss or shock
_____C. an attack
_____D. a hard hit

32. To talk at a meeting, you must be given the yuv.

_____A. the right to speak
_____B. part of a room to walk on
_____C. story of a building
_____D. flat surface of anything

33. Chickenpox makes the temperature of your zig very high.

_____A. the main part of anything
_____B. substance
_____C. the whole part of a man or animal
_____D. a group of persons

34. In the early days of Rome, a goc would have many slaves.

_____A. an expert
_____B. person who rules or commands people or things
_____C. a picture by a great artist
_____D. title of respect for a boy

APPENDIX D

Means and Standard Deviations of the Error Scores for Common Meanings by Experimental Group

		Real	Trigram
C	Boys	5.88 (4.28)	6.38 (3.00)
	Girls	2.00 (2.00)	5.63 (3.16)
D	Boys	4.25 (3.90)	5.50 (3.84)
	Girls	2.13 (2.52)	4.88 (2.42)

Means and Standard Deviations of the Error Scores for Obscure Meanings by Experimental Group

		Real	Trigram
C	Boys	10.00 (2.87)	8.00 (3.87)
	Girls	8.38 (5.49)	5.88 (3.69)
D	Boys	9.0 (2.65)	6.75 (3.49)
	Girls	6.13 (3.10)	4.75 (2.63)

REFERENCES

Aborn, M., Rubinstein, H., and Sterling, T. D. Sources of Contextual Constraint Upon Words in Sentences. Journal of Experimental Psychology, 1950, 57, 171-180.

Ames, W. S. The Development of a Classification Scheme of Contextual Aids. Reading Research Quarterly, 1966, 2, 57-83.

Butler, H. A. "Finding Word Meaning From Context in Grade Five and Six." Unpublished Master's thesis, School of Education, Boston University, 1943.

Carroll, J. B. On Learning From Being Told. Educational Psychologist, 1968, 5, 1-10.

Chall, J. S. Learning to Read: The Great Debate. New York: McGraw-Hill, 1967.

Davis, F. B. The Interpretation of Frequency Ratings Obtained From The Teachers' Word Book. Journal of Educational Psychology, 1944, XXXV, 169-174.

Dixon, W. J., and Massey, F. J. Introduction to Statistical Analysis. New York: McGraw-Hill, 1957.

Dodgson, C. L. Alice's Adventures in Wonderland and Through the Looking-Glass. New York: Macmillan, 1957.

Dulin, K. L. "The Role of Contextual Clues in the Acquisition of Specific Reading Vocabulary by Mature Readers." Unpublished Doctoral Dissertation, University of Washington, 1968.

Fodor, J. A., and Katz, J. J. The Structure of Language, Readings, in the Philosophy of Language. Englewood Cliffs, New Jersey: Prentice Hall, 1964, 479-518.

Frayer, D. Effects of Number of Instances and Emphasis of Relevant Attribute Values on Mastery of Geometric Concepts by Fourth- and Sixth-Grade Children. Technical Report Number 16. Wisconsin Research and Development Center for Cognitive Learning, The University of Wisconsin, Madison, 1970.

Gammon, A. L. Comprehension of Words With Multiple Meanings. California Journal of Educational Research, 1952, 5, 228-232.

Gates, A. I. Sex Differences in Reading Ability. The Elementary School Journal, 1961, LXI, 431-434.

Hafner, L. E. A One-Month Experiment in Teaching Context Aids in Fifth Grade. Journal of Educational Research, 1965, 58, 472-474.

Harris, T. L. "Discrimination of Word Meanings in the Fourth and Sixth Grades." An unpublished Master's Thesis, Department of Education, University of Chicago, 1938.

Hays, W. L. Statistics. New York: Holt, Rinehart, and Winston, 1963.

Howards, M. How Easy Are Easy Words? Journal of Experimental Education, 1964, 32, 377-382.

Hoyt, C. Test Reliability Estimated by Analysis of Variance. Psychometrika, 1941, 6, 153-160.

Hughes, M. C. Sex Differences in Reading Achievement in the Elementary Grades. Clinical Studies in Reading, 11, Supplementary Educational Monographs Number 77. Chicago: University of Chicago Press, 1953, 102-106.

Lorge, I., and Thorndike, E. L. A Semantic Count of English Words. 3 Vols. New York: Institute of Educational Research, Teachers College, Columbia University, 1938.

Lorge, I., and Chall, J. Estimating the Size of Vocabularies of Children and Adults: An Analysis of Methodological Issues. Journal of Experimental Education, 1963, 32, 147-157.

Louthan, V. Some Systematic Grammatical Deletions and Their Effects on Reading Comprehension. English Journal, 1965, 54, 295-299.

McCullough, C. M. The Recognition of Context Clues in Reading. Elementary English Review, 1945, 22, 1-8.

McKee, P. The Teaching of Reading in the Elementary School. Cambridge, Massachusetts: Houghton-Miflin, 1948.

Onions, C. T., ed., Oxford English Dictionary. 13 Vols. Oxford: Clarendon Press, 1966.

Rinsland, H. D. A Basic Vocabulary of Elementary School Children. New York: Macmillan, 1945.

Smith, N. B. Reading Instruction for Today's Children. Englewood Cliffs, New Jersey: Prentice Hall, 1963.

Spache, G., and Spache, E. Reading in the Elementary School. Boston: Allyn and Bacon, 1969.

Stroud, J. B., and Lindquist, E. F. Sex Differences in Achievement in the Elementary School. Journal of Educational Psychology, 1942, XXXIII, 657-667.

Thorndike, E. L. Improving the Ability to Read. Teachers College Record, 1934, XXXVI, 1-19.

Thorndike, E. L., and Lorge, I. The Teachers' Word Book of 30,000 Words. New York: Bureau of Publications, Teachers College, Columbia, 1963.

Thorndike, E. L., and Barnhart, C. L. Thorndike Barnhart Beginning Dictionary. 5th Ed. Garden City, New York: Doubleday, 1964.

Underwood, B. J., and Schulz, R. W. Meaningfulness and Verbal Learning. Chicago: Lippincott, 1960.

Werner, H., and Kaplan, E. Development of Word Meaning Through Verbal Context: An Experimental Study. The Journal of Psychology, 29, 251-257.

West, M. A General Service List of English Words. London: Longmans Green, 1953.

Woodruff, A. D. The Psychology of Teaching. New York: Longmans, Green, 1951.